ENGINEERING NEWS-RECORD

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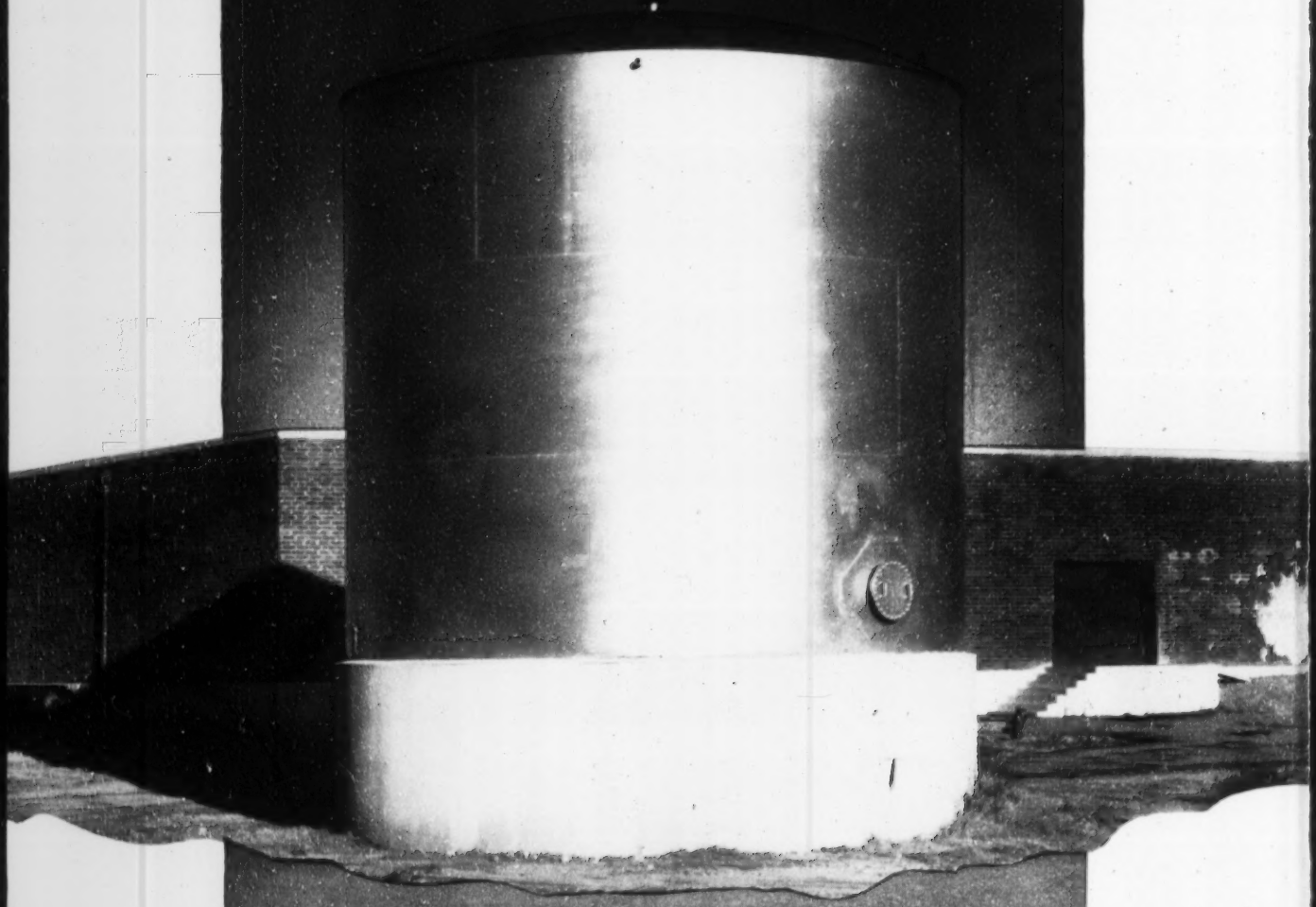
The Best Plant Fire Defense is a Good Offense



A Horton suction tank like the 100,000-gal. structure shown above, coupled with an automatic sprinkler system, provides a brand of fire protection that's hard to beat. The minute a fire breaks out, water from the Horton tank is pumped to the opened sprinkler head to quench the flames before they gain headway. No precious time is lost—the first few minutes are the most important time to control a fire. Water in the Horton tank is always available—any hour of the day or night.

In addition to flat-bottom suction tanks for plant fire protection, CB&I builds Horton elevated steel water tanks and Waterspheres. No matter which type of water supply best suits your needs, suction tank or elevated storage, write our nearest office for estimates or quotations. There is no obligation on your part.

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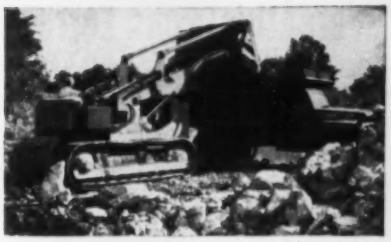
Plants in BIRMINGHAM, CHICAGO, SALT LAKE CITY and GREENVILLE, PA. In Canada: HORTON STEEL WORKS LIMITED, FORT ERIE, ONT.

a demonstration will show how you can . . .

cut costs, speed many jobs with this 2-yd. Tractor Shovel

The Tractor Shovel's value in mechanizing many phases of construction has been proved again and again by the versatile Allis-Chalmers 1-yd. HD-5G. The HD-9G, with its larger 2-yd. bucket, offers the same wide range of use with *double* the working capacity.



PREPARES RAW LAND with standard 2-yd. bucket, bulldozer blade or rock fork. Removes rocks, clears trees and brush, fills gullies, levels and rough grades. Angledozer blade also available. Rear-mounted scarifier increases efficiency in tough digging.

REDEVELOPS LAND — The HD-9G Tractor Shovel effectively clears and loads rubble from razed slum areas — makes land available for new building projects, parking areas, playgrounds.

EXCAVATES BASEMENTS. Efficiently digs, loads materials of all kinds. Shift pattern lets operator go from any forward to any reverse speed with one movement of shift lever . . . for faster loading cycles.

BACKFILLS, LEVELS, LANDSCAPES. Fills in plumbers' trenches, around sewer, gas and water pipe — transports excess dirt between houses, fills in around foundations, finish grades, builds driveways.

MOVES, LOADS, SPOTS MATERIALS with bucket. Also lifts, loads, skids lumber and pipe — elevates bricks, shingles to roof height. Bucket has 11 ft. 4 in. dumping height. Crane hook also available for special lifting jobs.

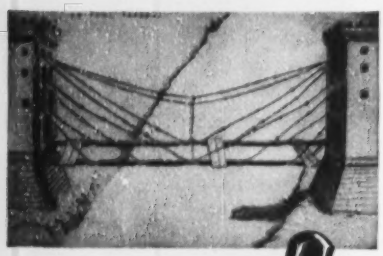
HD-9G — 72 drawbar hp. 29,900 lb. with standard 2-yd. hydraulic bucket.

Ask your Allis-Chalmers dealer to show how your construction jobs can be mechanized by the HD-9G, or one of the other 1- to 4-yd. Tractor Shovels — or write direct for more information.

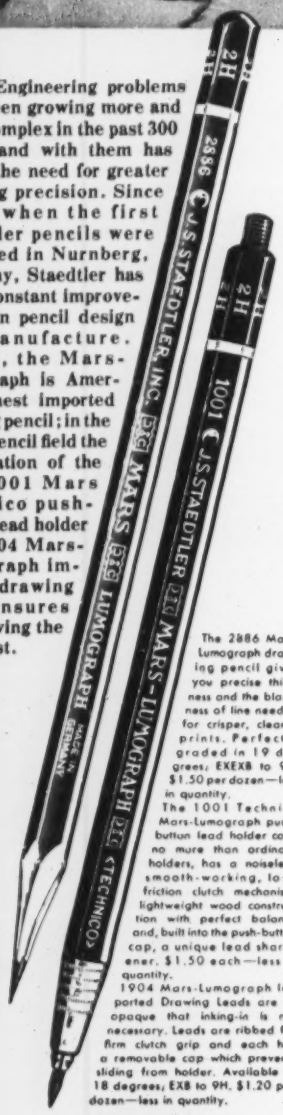
ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

Verantius' Pons Ferreus

A SUSPENSION BRIDGE DESIGN
early seventeenth century



Engineering problems have been growing more and more complex in the past 300 years, and with them has grown the need for greater drafting precision. Since 1662, when the first Staedtler pencils were produced in Nurnberg, Germany, Staedtler has made constant improvements in pencil design and manufacture. Today, the Mars-Lumograph is America's finest imported drawing pencil; in the clutch pencil field the combination of the new 1001 Mars Technico push-button lead holder and 1904 Mars-Lumograph imported drawing leads insures your having the very best.



The 2886 Mars-Lumograph drawing pencil gives you precise thickness and the blackness of line needed for crisper, cleaner prints. Perfectly graded in 19 degrees; EXEXB to 9H. $1.50 per dozen—less in quantity.

The 1001 Technico Mars-Lumograph push-button lead holder costs no more than ordinary holders, has a noiseless, smooth-working, low-friction clutch mechanism, lightweight wood construction with perfect balance and, built into the push-button cap, a unique lead sharpener. $1.50 each—less in quantity.

1904 Mars-Lumograph Imported Drawing Leads are so opaque that inking-in is not necessary. Leads are ribbed for firm clutch grip and each has a removable cap which prevents sliding from holder. Available in 18 degrees, EXB to 9H. $1.20 per dozen—less in quantity.

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Robert F. Boger

Publisher

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1 Uniform treatment The uniform, unvarying standards of treatment that are characteristic of Wolmanized clean pressure-treated lumber begin with the production of the preservative chemical itself. Controlled by a single exacting standard, Wolman brand preservative never deviates from its chemical formula. And the high-pressure treatment process by which Wolman salts, in solution, are driven deep into wood is also completely controlled, always the same. Retorts and other pressure-treatment equipment must meet strict AL&T requirements before a preserver is licensed to produce Wolmanized pressure-treated lumber. Since the preservative is forced deep into the fibers of the wood by pressures up to 150-p.s.i., equipment must have at least that capacity before approval is granted. Thus, from all 14 sources operating 24 pressure-treatment plants, Wolmanized clean treated lumber is always the same. Wherever you specify, use or buy Wolmanized lumber you are assured that uniform treatment is providing a product with undeviating quality.

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3 Available anywhere. 47% of all clean pressure-treated lumber is Wolmanized . . . nearly as much as the total output of all other sources combined. When you specify Wolmanized lumber, delivery is certain, since 24 qualified wood preserving plants in the United States and Canada provide coast-to-coast distribution.

4 Proved dependability. Dependability of Wolmanized lumber is documented by actual service records. Unusually long life, even under the most adverse conditions, is another advantage of Wolmanized pressure-treated lumber. For further information write: American Lumber & Treating Company, McCormick Building, Chicago, Illinois.

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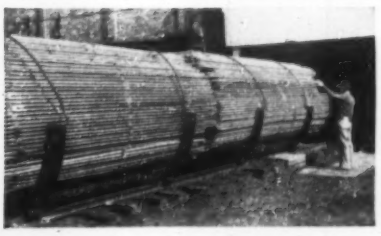
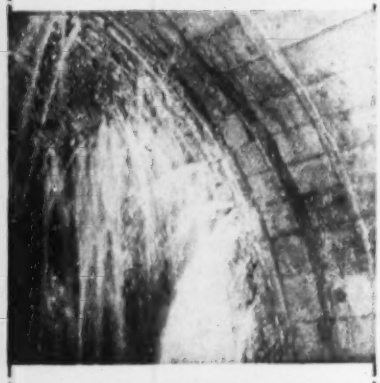


Pressure-Treated

Wolmanized
LUMBER

SIKA STOPS LEAKS FAST



...AND SIMPLY, TOO...

Sika can seal leakage through any concrete structure against pressure. The Sika method is quick, sure and long-lasting.

Here is all you do.

1. Hack and clean surface.
2. Mix quick-setting Sika liquid and portland cement.
3. Use Sika No. 4A mortar for sealing seepage and diverting water to bleeder holes. (For air-placed mortar use Sigunit.)
4. Use Sika No. 2 mortar (sets in 20 seconds) to plug bleeders.
5. After sealing all leaks, apply a protective cement coat over entire surface.

For 30 years Sika compounds and methods have helped solve concrete and masonry problems ranging from the production of high quality concrete to the sealing of joints or cracks subject to severe movement and pressure.

Additional Sika compounds cover the following specific problems: TO SEAL LEAKS AGAINST PRESSURE, TO SEAL JOINTS OR CRACKS, TO REPAIR NON-LEAKING SURFACES, TO REPAIR STRUCTURAL EXTERIORS, TO PLACE GUNITE OR PRESSURE GROUT, TO PRODUCE HIGH QUALITY CONCRETE.

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READER COMMENT

Product same after 50 years

SIR: The Anti-Hydro Waterproofing Co. has just completed 50 years of service. Our principal product "Anti-Hydro" was first used in 1904. The formula had been discovered by Frederick M. Hausling, an engineer, who collaborated with Dr. Thomas B. Stillman, head of the chemistry department of Stevens Institute of Technology and an authority on waterworks. They tried to find some method for improving the quality of portland cement mortars and concrete. After several years of experimentation, they discovered the Anti-Hydro formula which has never been changed in 50 years. Apparently there has been no need for improvement of the product. The distribution and field service have improved each year.

Among the early installations in New York City, wherein Anti-Hydro was used as an integral waterproofing or as an integral floor hardener, was the 59th St. power plant of the I.R.T., one of the buildings in the Consolidated Edison Co. Waterside plant, the Automobile Club of America, the Singer Building, Packard Motor Car Co. sales building and the Scribner Building. It was also used in the Prudential Insurance Co. building in Newark, N. J., and the Hotel Battle House, Mobile, Ala. All these installations were prior to 1908.

M. W. MEYER
Anti-Hydro Waterproofing Co.
Newark, N. J.

L. A. and sewage lagoons

SIR: Watching the operation of sewage lagoons, where the waste products in sewage are disposed of neatly and cheaply by serving as food for an amazing array of plant and animal life (see article "Sewage lagoons" ENR Aug. 20, 1953, p. 48) leads me to offer the following comments on your article "Sewage disposal plans contested" (ENR Feb. 25, p. 26) wherein a controversy rages between those who would destroy Los Angeles wastes with ever bigger and better equipment and machinery, and those who would feed it to the fish in the ocean:

1. Nature has furnished the people of Los Angeles a lagoon of unlimited size by providing the Pacific Ocean.

2. The big expensive Hyperion activated sludge plant accomplishes nothing which a cubic mile of ocean water would not do better, at no cost.

3. Look into the future, when a world hungry because of over-population may no longer be able to afford the luxury of wasting good nutrients found in sewage because of inefficient combustion in the human metabolism, but will use them for feeding lower forms of life, by cultivating plants and fish for animal fodder or human food, perhaps in a piece of ocean with a fence around it.

WILLIAM J. WENZEL
Consulting Engineer
Great Falls, Ont.

U. S. makes better concrete

SIR: In ENR Feb. 25, p. 23, are two quotes by Prof. Gustav Magnel: "U. S. contractors are poor concrete makers," and "U. S. makes soup instead of concrete." This supposed condition is given as the principal reason for the slow progress of prestressed concrete in the U. S.

Observations in Europe, and elsewhere in the world, have caused me to come to the conclusion that in general concrete as made here, or by U. S. contractors outside the U. S., is definitely superior to the quality of that produced by foreign contractors.

Although no competent data are available, I am of the opinion, from discussions and observations, that there is probably as large a volume of prestressed concrete and low-slump concrete work in the United States as in all of Europe. Causes of the seeming lack of progress, or all-out concentration on prestressed concrete can be found in differences between the U. S. and Europe in labor and material costs, design and construction practices, and factors of safety required by building codes.

After having observed the results of the use of prestressed concrete for fuel-storage tanks during the war, U. S. engineers wisely have proceeded with care in developing the application of this type of construction.

MILES N. CLAIR
President
The Thompson & Lichtner Co., Inc.
Brookline, Mass.

On the unity issue

SIR: The Mobile Chapter of the Alabama Society of Professional Engineers, an affiliate of the National Society of Professional Engineers, takes this means to register vigorous objection to an editorial in ENR Dec. 10, p. 172, which, under the guise of deploring disunity among engineers, implicity and directly criticizes the

(*Continued on page 8*)

Tandem-Axle Models
. . . With two 7-cubic-yard hoppers. Gate controls are hand, cable, or air-operated, with 10 different settings for gate control pins. Gates can be set up for individual operation.

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GRAVEL SPREADER — hopper-type dump — lightweight transport for sand, cinders, gravel, soda ash, coal, and bulk cement — these are just a few of the functions of this versatile, high-capacity, new Fruehauf! Construction men, specialized haulers of construction materials, and highway departments are finding it the perfect answer to a great variety of hauling needs.

Extremely low cost, extremely light weight, and extremely high capacity are three of the exceptional advantages of the Fruehauf Hopper-Type Dump. Since there is no heavy lift equipment and only one integral-type frame, a tandem Hopper-Type unit saves you more than 1000 pounds in equipment weight as opposed to a hoist-type dump of comparable length. Initial cost and maintenance expense are also greatly reduced because of the elimination of hoist equipment and extra trussing.

Contact your neighboring Fruehauf Branch today for complete specifications, prices, and adaptations of this new Fruehauf to your own special hauling needs!

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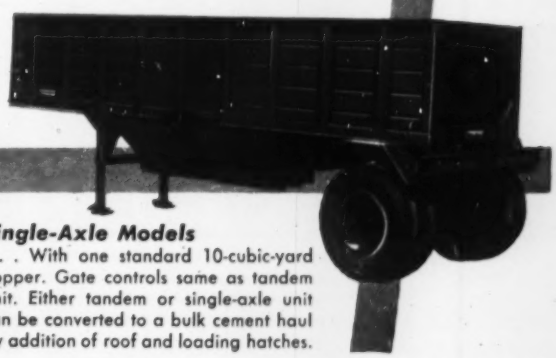
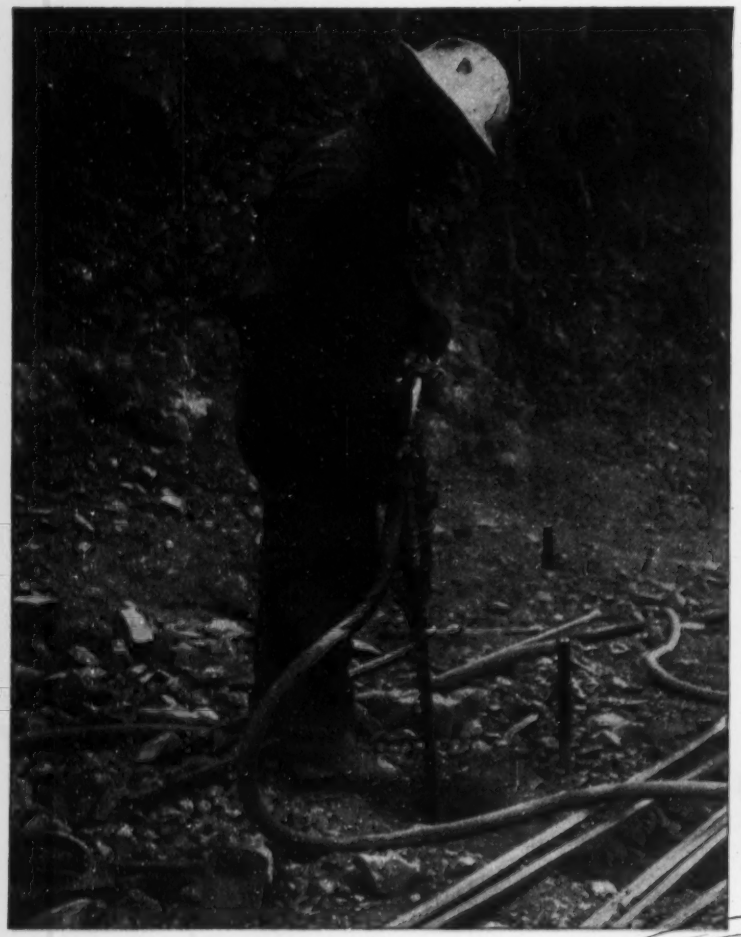


Single-Axle Models
. . . With one standard 10-cubic-yard hopper. Gate controls same as tandem unit. Either tandem or single-axle unit can be converted to a bulk cement haul by addition of roof and loading hatches.



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(2) EXCLUSIVE! JOY DUAL VALVE "Makes Air Do More Work"

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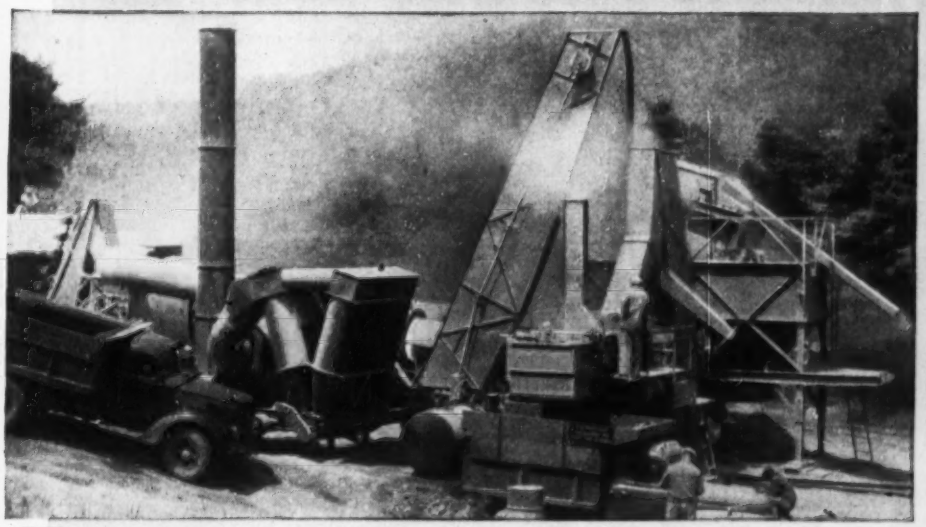

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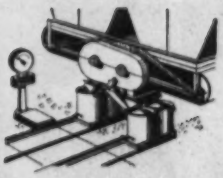

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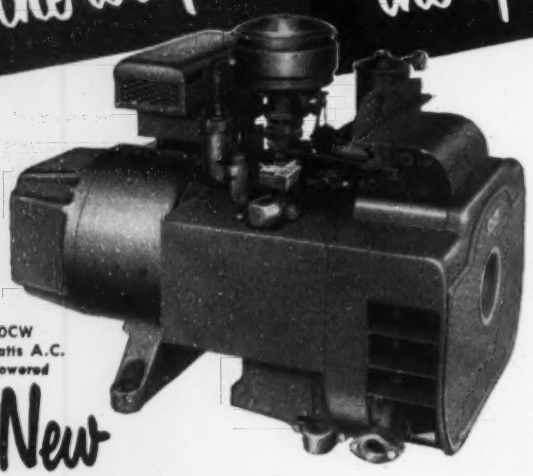
with half the weight! in half the space!



MODEL 10CW
10,000 watts A.C.
Gasoline powered

the New

ONAN "10 CW" Electric Plant

Check these advantages!

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- ★ High performance generators.
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Costs less than any other complete electric plant!

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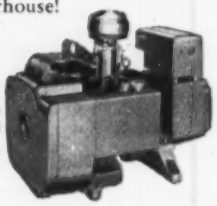
On large construction jobs, where wattage requirements for power tools are high, or where floodlighting of extensive work areas is essential, the Onan *10CW* delivers all the electric power you need.

Before you buy another electric plant for any purpose, take a good look at this new low-cost powerhouse!

Model 5CW
5,000 watts
Same advanced design as the 10CW with all its exclusive advantages. Built for heavy duty, economical operation.



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Onan ELECTRIC PLANTS

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READER COMMENT

National Society of Professional Engineers for failure to affiliate with the Engineers Joint Council.

It is our belief that it is not the function of a respected and supposedly unbiased publication to take sides in such an issue and while it is within its province to deplore disunity, it is not its prerogative to assign the blame for such disunity.

We have no quarrel with the EJC or any of the member societies, and it is neither our purpose nor prerogative to argue the differences of opinion, other than to express our belief that the facts and figures quoted in the editorial will bear critical investigation.

We do believe, however, that the NSPE has been unjustly blamed and placed in an unfavorable position in the sphere of public opinion.

JOHN T. MARSHALL, JR.
President

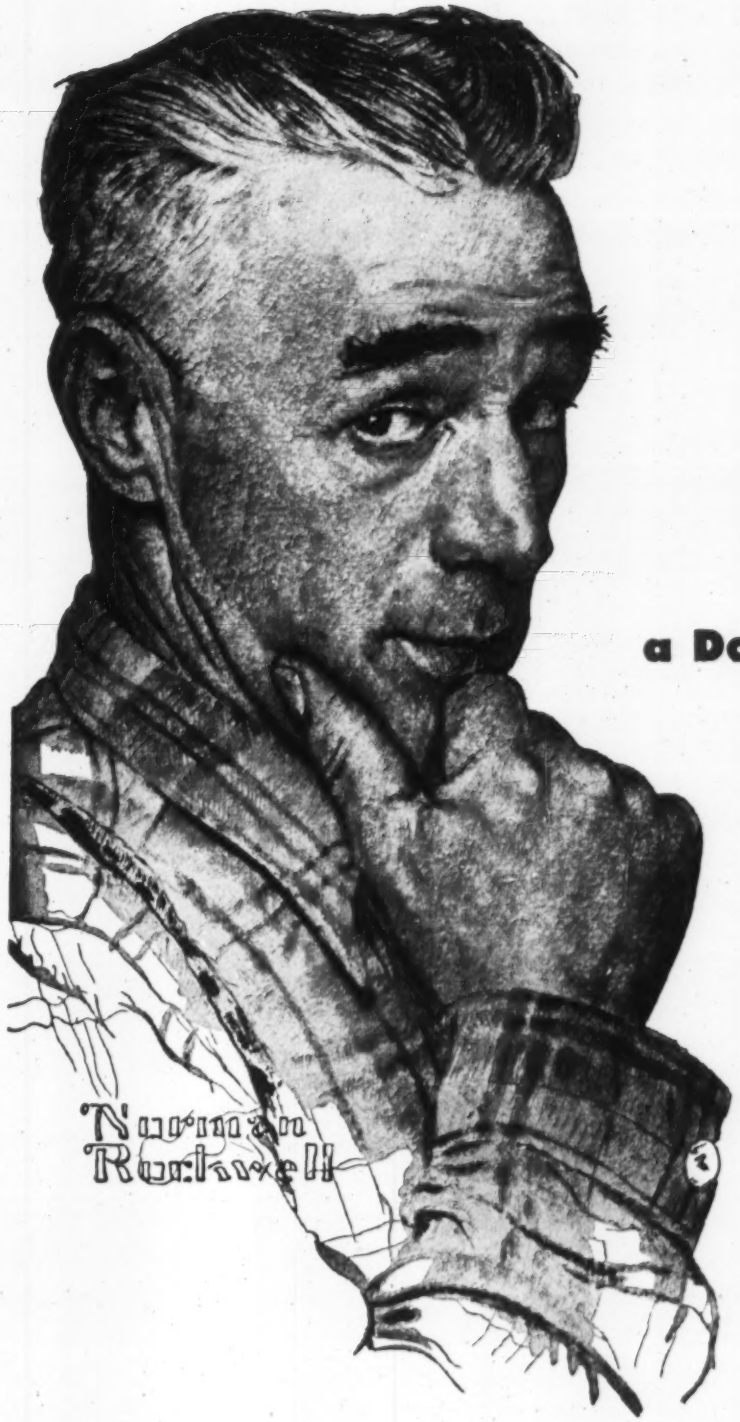
[EDITORS NOTE—We must disagree with the contention that editorials should not "take sides" on controversial questions. More often than not it is only by such frank and forthright discussion that thinking can be stimulated to the degree necessary for finding a solution—even one that does not accord with the editorial.

In discussing the question of greater unity in the engineering profession we did not intend to put NSPE "in an unfavorable position in the sphere of public opinion." Our purpose was to point to conditions that, in our opinion, made it desirable for NSPE to join EJC even though such a step would appear to be contrary to the basic concept of NSPE.

The basic concept of NSPE as the organization to represent engineers nationally is rather widely conceded to be superior to that of EJC. But the four major engineering societies, which set up EJC following the collapse of American Engineering Council, were strong and (in their particular fields) representative societies long before NSPE was organized. Today NSPE has only one-fifth to one-fourth of the membership of the societies represented by EJC, when duplications in membership are eliminated. When the day approaches that NSPE has comparable membership, then the question of which organization should serve as the spokesman for the profession on national issues should be restudied, as was said in the editorial. Then if NSPE is agreed to have the superior type of organization, it is logical to conclude that it would be selected and EJC abandoned.

To repeat in different terms what

(Continued on page 12)



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a Doubting Thomas?

IF YOU'RE a man who has to be shown, we're right in your corner. Just give Roebling "Blue Center" Steel Wire Rope one try... see for yourself how it saves time and costs you less on the job.

Two out of three wire rope users in excavating and construction prefer Roebling rope. Call the nearest Roebling office for a Field Man to suggest the best ropes for your purposes.

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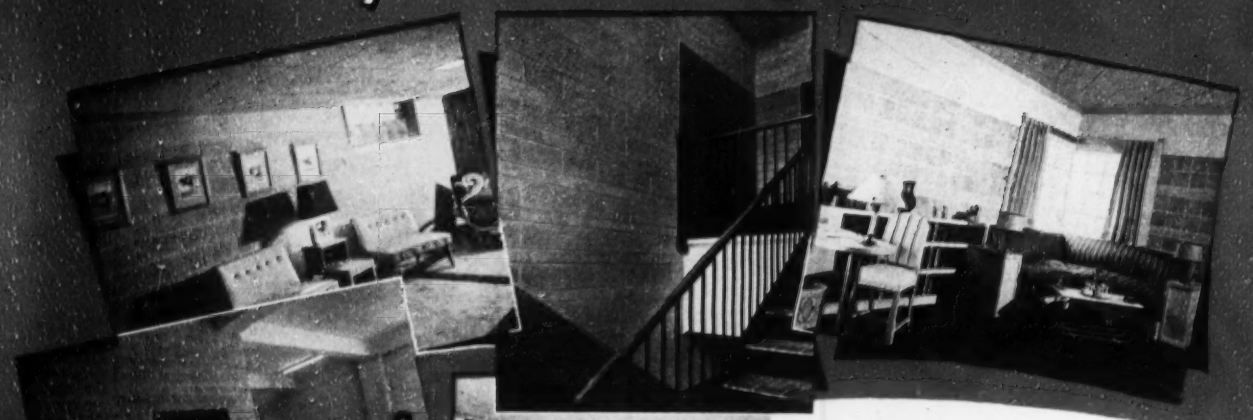

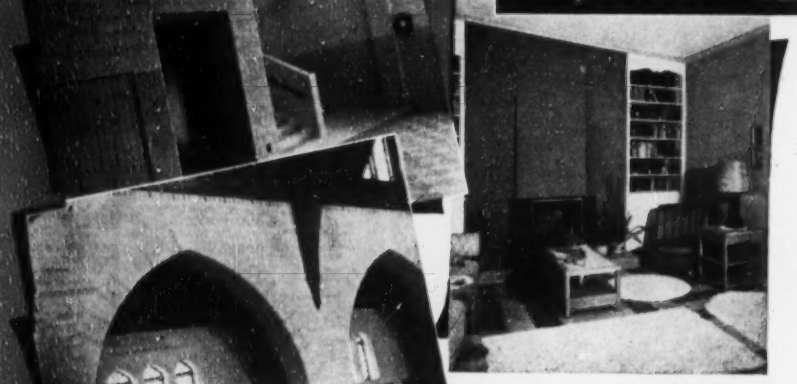

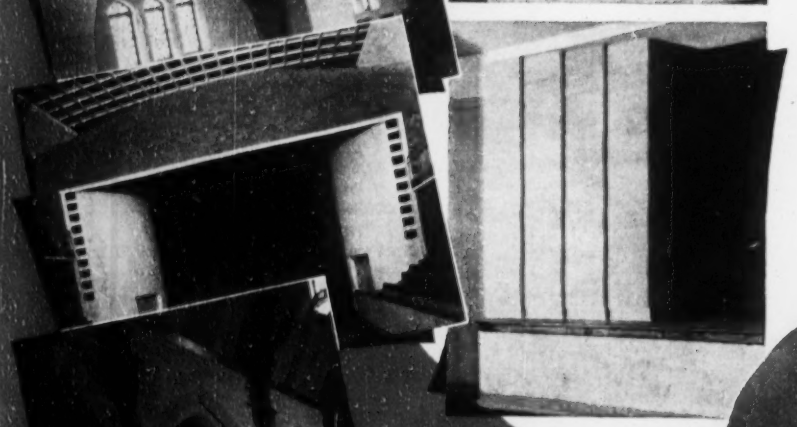

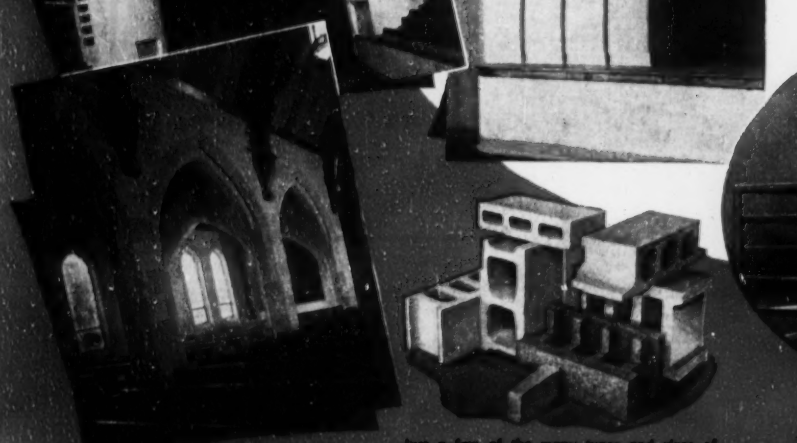

The permanent charm and beauty of VIBRAPAC Premium Block are not limited to the exterior of a building. Interior walls and partitions are made with VIBRAPAC Block, in a variety of distinctive designs and patterns. Modern, low-cost floors are built with fire-safe Floor Filler Block.

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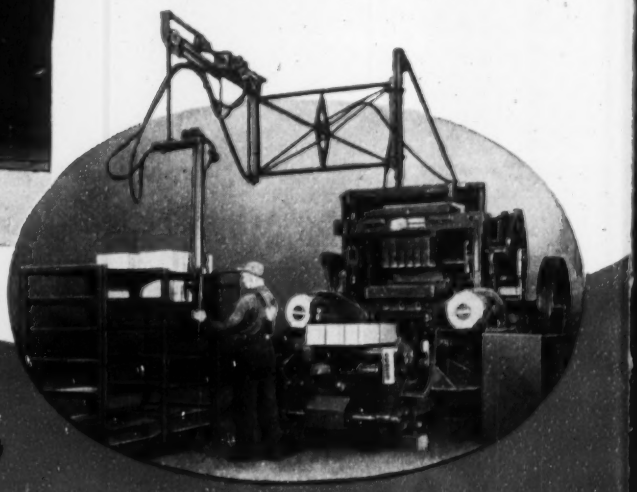
Ask your nearby VIBRAPAC-equipped plant for bulletin illustrating VIBRAPAC Premium Block available.



Just a few of the many types and sizes of Units made on a Besser Vibrapac machine.

Besser Front Pallet Feed Vibrapac equipped with power all-bearing Besser Products ALL types and sizes of block on one set of Plain Pallets. No manual filling. Off-bearer unerringly guides the green block.

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Complete Equipment for Concrete Products Plants

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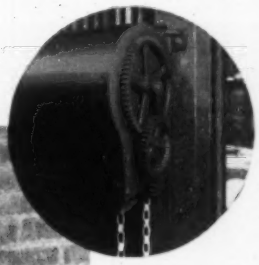
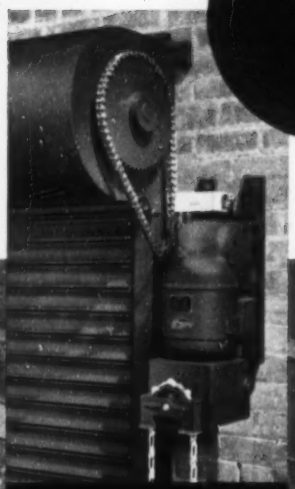
Rolling Steel Doors

Manually, Mechanically, or Electrically Operated



MAHON CHAIN-GEAR OPERATOR



MAHON STANDARD POWER OPERATOR 920-P

Two Special Power Operators are also available to meet unusual requirements including JIC Stds.

No other type of door can equal the outstanding advantages of a good electrically operated rolling steel door . . . no other type of door so fully meets present-day requirements in modern industrial or commercial buildings. The quick-opening, quick-closing, vertical roll-up action of a rolling steel door requires no usable space either inside or outside the door opening . . . there are no overhead tracks or other obstructions to interfere with crane operations—materials can be stacked within a few inches of the door curtain on either side. No other type of door offers these inherent advantages of space economy and compactness in operation . . . in addition, rolling steel doors are permanent—their all-metal construction assures a lifetime of trouble-free service and maximum protection against intrusion and fire. When you select a rolling steel door, check specifications carefully . . . you will find many extra-value features in Mahon doors—for instance, the galvanized steel material, from which the interlocking curtain slats are rolled, is chemically cleaned, phosphated, and treated with a chromic acid solution to provide paint bond, and, the protective coating of synthetic enamel is baked on at 350° F. prior to roll-forming. You will find other quality materials and design features in Mahon doors that add up to a greater overall dollar value. See Sweet's Files for complete information including Specifications, or write for Catalog G-54.

THE R. C. MAHON COMPANY

Detroit 34, Michigan • Chicago 4, Illinois • Representatives in all Principal Cities

Manufacturers of Rolling Steel Doors, Grilles, and Automatic Closing Underwriters' Labeled Rolling Steel Doors and Fire Shutters; Insulated Metal Walls and Wall Panels; Steel Deck for Roofs, Partitions, and Permanent Concrete Floor Forms.

ROLLING STEEL DOORS, SHUTTERS AND GRILLES TO MEET EVERY REQUIREMENT

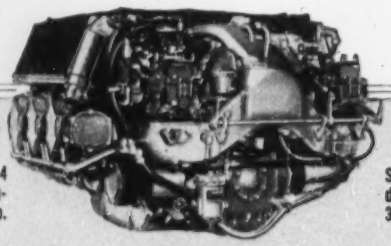
MAHON

SPEAKING OF HORSEPOWER...

. . . whether you need TWO or A THOUSAND, there's a Continental Red Seal Ⓣ model Engineered and Built for Your Job

Now that the military models developed jointly with Army Ordnance are available for civilian uses, you can get Continental power for commercial applications at just about every power level from a lawnmower up to a tank. These air-cooled military series, from 375 to more than 1,000 horsepower, have been thoroughly proven under combat conditions. Their high power-weight ratio, ease of maintenance, and stamina for sustained peak loads suggest their special suitability for many jobs in the industrial field . . . Inquiries are invited.

PARTS AND SERVICE COAST TO COAST



Continental A0895-4 Air-Cooled 6-Cylinder Engine, 375 h.p.

Supercharged version, designated as A0895-3, develops 500 h.p.

1819 BROADWAY, NEW YORK 23, NEW YORK • 1252 OAKLEIGH DRIVE, EAST POINT (ATLANTA) GA. • 6218 CEDAR SPRINGS ROAD, DALLAS 9, TEXAS • 3817 S. SANTA FE AVE., LOS ANGELES 58, CALIF. • 910 S. BOSTON ST., ROOM 1008, TULSA, OKLA.

Continental Motors Corporation
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READER COMMENT

we said in the editorial, we think the approach of that day will be hastened by a decision on the part of NSPE to accept full membership in Engineers Joint Council.

We intended our comment to be a challenge—not a criticism.]

Wrong courthouse

SIR: On page 277 of your Feb. 18, 1954, issue and on page 29 of your March 4, 1954, issue you have reported the trial and conviction on anti-trust charges of Local Union 175, International Brotherhood of Electrical Workers, which Local has headquarters in Chattanooga, Tenn.

In each report it was incorrectly stated that the trial was in Federal District Court at Nashville, Tenn.

Actually, the trial was in Federal District Court in Chattanooga, Tenn.

G. PAUL CROWDER
Manager
Nashville Chapter, NECA

CALENDAR

ASCE Pipeline Conference, Hotel Scharbauer, Midland, Tex., April 9-10.

Construction conference on "Walls, floors and roofs," Cleveland Engineering Society Building, Cleveland, Ohio, April 12.

American Institute of Steel Construction, national engineering conference, Hotel Schroeder, Milwaukee, Wis., April 13-14.

Society for Experimental Stress Analysis, Netherlands Plaza Hotel, Cincinnati, Ohio, April 14-16.

Annual Road School, April 19-22; and Conference on Road and Street Traffic Control, April 22-23, Purdue University, Lafayette, Ind.

Conference on instrumentation in water, sewage and industrial waste treatment, Manhattan College, New York City, April 20.

Southern Industrial Wastes Conference, Hotel Shamrock, Houston, Tex., April 21-23.

American Society of Civil Engineers, Pacific Northwest Conference, Davenport Hotel, Spokane, Wash., April 22-24.

Air Pollution Control Association, Patten Hotel, Chattanooga, Tenn., May 3-6.

Wire Reinforcement Institute, spring meeting, Boca Raton Hotel, Boca Raton, Fla., May 3.

Concrete Reinforcing Steel Institute, Boca Raton Hotel, Boca Raton, Fla., May 3-8.

7th World Health Assembly, World Health Organization, Geneva, Switzerland, May 4.

Annual meeting, Steel Joist Institute, Boca Raton Club, Boca Raton, Fla., May 4.

Highway Transportation Congress, Hotel Mayflower, Washington, D. C., May 4-6.

American Welding Society, national technical meeting, Hotel Statler, Buffalo, N. Y., May 4-7.

Forest Products Research Society, national meeting, Grand Rapids, Mich., May 5-7.

Welding & Allied Industry exposition, Memorial Auditorium, Buffalo, N. Y., May 5-7.

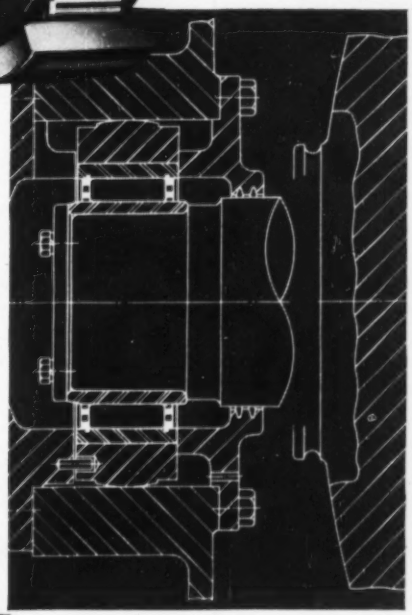
Michigan Engineering Society convention, Jackson, Mich., May 7-8.

Pa. Society of Professional Engineers, annual convention, Bedford Springs Hotel, Bedford, Pa., May 7-8.

Industrial Waste Conference, Purdue Memorial Union, Lafayette, Ind., May 10-12.

Is shaft expansion a problem?

HERE'S HOW HYATTS HELP...



Hyatt Hy-Loads are available in separable outer race, separable inner race or non-separable construction.

Check the drawing at the left. The bearing is a Hyatt Hy-Load, and because the inner race is cylindrical, the shaft it supports is free to move axially—thus allowing for shaft expansion without cramping the bearing or distorting the shaft. Obviously, this is only one of many ways in which Hyatt bearings can be used to reduce costs as they reduce friction, but it's a good example of why so many designers throughout industry keep their Hyatt catalogs within easy reach.

For further details write for Catalog 150 or call your nearest Hyatt representative.

HYATT ROLLER BEARINGS

STRAIGHT BARREL TAPER

HYATT BEARINGS DIVISION • GENERAL MOTORS CORPORATION • HARRISON, NEW JERSEY

Adams TraveLoader

Speeds Loading Operations

For Contractors

Like many other contractors, Burrell Construction Company, New Kensington, Pa., finds a wide variety of uses for Adams TraveLoader. D. C. Traister, General Superintendent, says, "We operate two Adams TraveLoaders. These machines are kept busy loading surplus material on street construction jobs, loading stockpiled material for road and street grades, etc. We particularly like the heavier construction and better traction of the TraveLoader." ... Ask your local Adams dealer to give you a working demonstration of how the TraveLoader will cut loading time and costs—for you!

Here a road contractor uses an Adams TraveLoader for picking up surplus dirt on a road-widening job.

For Counties

Cass County, Indiana, uses an Adams TraveLoader for picking up surplus ditch and shoulder material in the process of maintaining proper drainage on its system of 1150 miles of roads. Ross Helms, Road Supvr., says, "We don't know how we could accomplish this program without the TraveLoader. We have loaded as many as 185 trucks in one day. Some days we sell enough dirt to pay operating expenses. We also like the TraveLoader for its speed in loading from stockpiles." . . . See your local Adams dealer for an on-the-job demonstration of the high-speed, high-performing TraveLoader.

This county-owned TraveLoader is loading gravel from stockpile for road resurfacing operations.

J. D. ADAMS MANUFACTURING CO. • INDIANAPOLIS, IND.

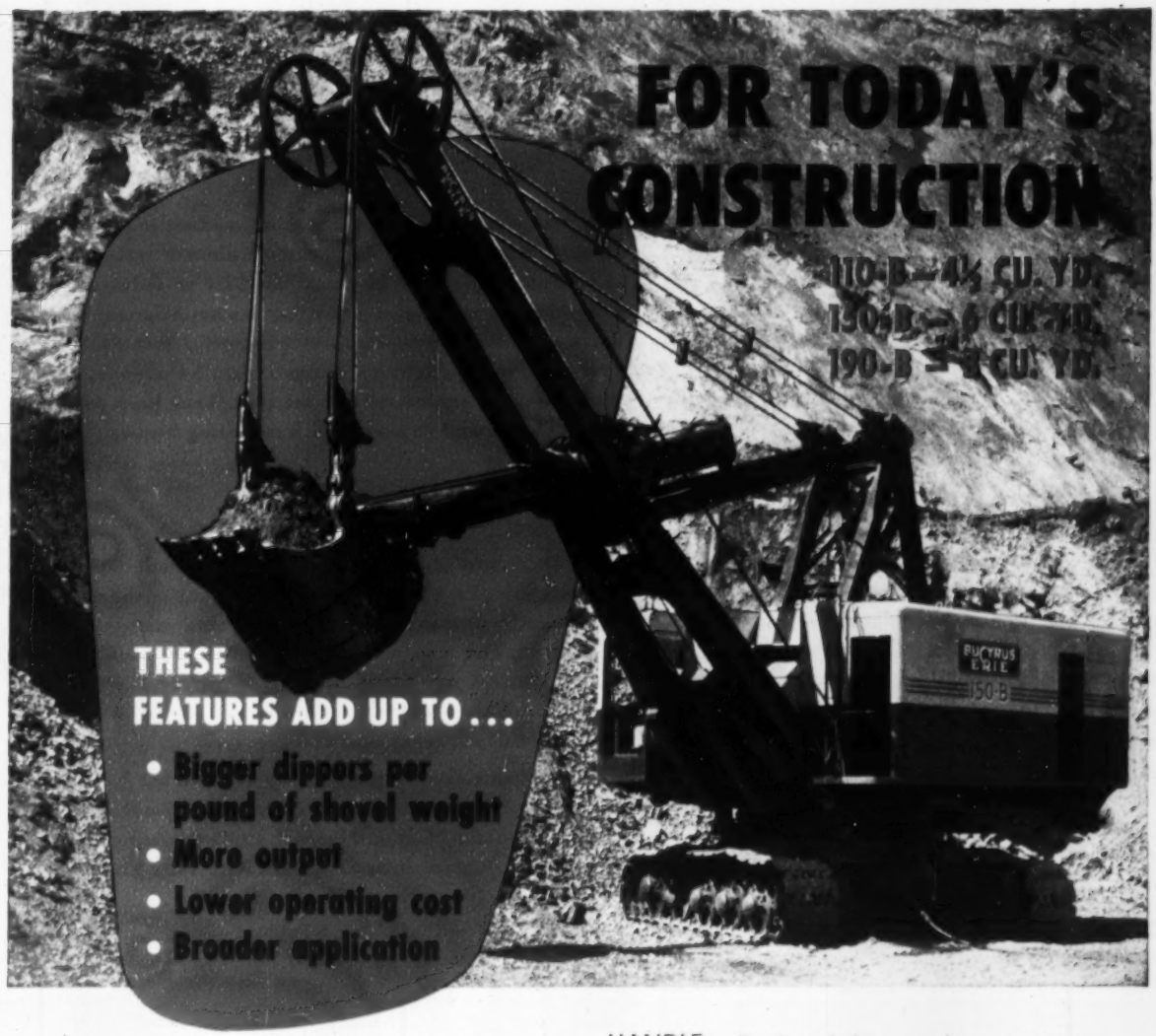
ADAMS

Motor Graders

TraveLoaders

Pull-Type Graders

Tomorrow's Shovels


FOR TODAY'S CONSTRUCTION
110-B — 4½ CU. YD.
150-B — 6 CU. YD.
190-B — 7 CU. YD.
THESE FEATURES ADD UP TO...
• Bigger dippers per pound of shovel weight
• More output
• Lower operating cost
• Broader application
BUCYRUS ERIE
150-B

Bucyrus-Erie's progressive design brings the modern shovel front end to the construction industry.

Only Bucyrus-Erie offers these features in front end equipment on heavy-duty shovels.

BOOM — Two section — light upper section, rugged lower section. No excess weight. Weight and strength concentrated where needed and close to center of rotation.

Lower boom section part of main machine, through twin strut connections to A-frame. Boom feet wide spread — no sway braces or cables. No boom jacking.

TYPE OF HOIST — Twin dual, single-part ropes, one attached to each side of dipper. Power automatically concentrated where needed on dipper lip to break through bank obstructions. No dipper bail.

SADDLE BLOCK — Cylindrical. Rubber cushioned against impact during fast plugging of swing. No binding with flexed dipper handles.

HANDLE — Single, tubular, one-piece, can rotate in saddle block. No handle twist possible.

CROWD MACHINERY — Located on revolving frame, close to center of rotation. Position reduces swing inertia. Accessible, protected.

TYPE OF CROWD — Quiet, positive, independent twin rope crowd and retract. Adapts itself to tubular handle rotation — low friction — less crowd power required.

CONVERTIBILITY — Shovels fully convertible to draglines of the independent motor type — no operating clutches or brakes.

There are many more reasons why these modern Bucyrus-Eries with Ward Leonard Variable Voltage control are the finest heavy-duty excavators ever built. Get the full story today.

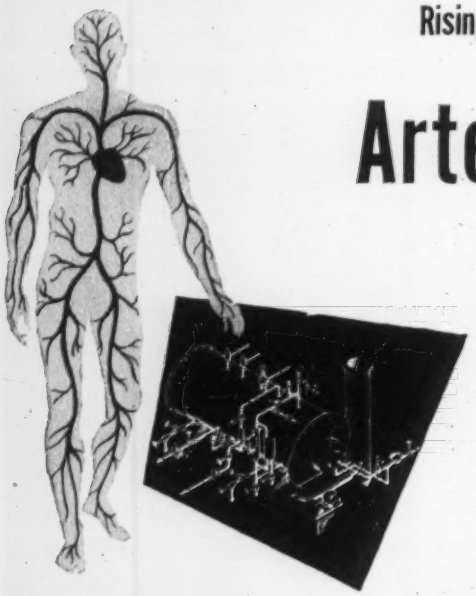
8L53C

BUCYRUS ERIE

South Milwaukee
Wisconsin

Rising pressure is a sign of robust health in the

Arteries of Industry



The vast piping networks threading modern industrial structures are comparable to the circulatory system of the human body. But in these "arteries of industry," a rapid pulse and higher pressures denote progress, not decline. Every development in processing technology, every rise in productivity brings a parallel advance in piping systems engineered for the task. They keep pace, in complexity and capacity, with mounting loads.

Valves to control the coursing fluids in these industrial arteries must be chosen with due regard for new-day demands. The penalty for valve trouble, in lost production and high maintenance, increases directly with complexity of modern installations.

If piping systems could be seen, as in the Jenkins Scale Model Power Plant illustrated, or in the "wall-less" structures now increasing in petro-chemical plants, their importance would be better realized. Since they are usually concealed, their major influence on successful operation is often overlooked.

The choice of Jenkins Valves for so many of the most efficiently operated plants in every industry is significant. The men who plan and erect the buildings that "make news" of industrial progress specify Jenkins Valves on their record of delivering an *extra measure* of efficiency and endurance.

Despite this extra value, *you pay no more* for Jenkins Valves. For new installations, for all replacements, let the Jenkins Diamond be your guide to lasting valve economy. Jenkins Bros., 100 Park Ave., New York 17.

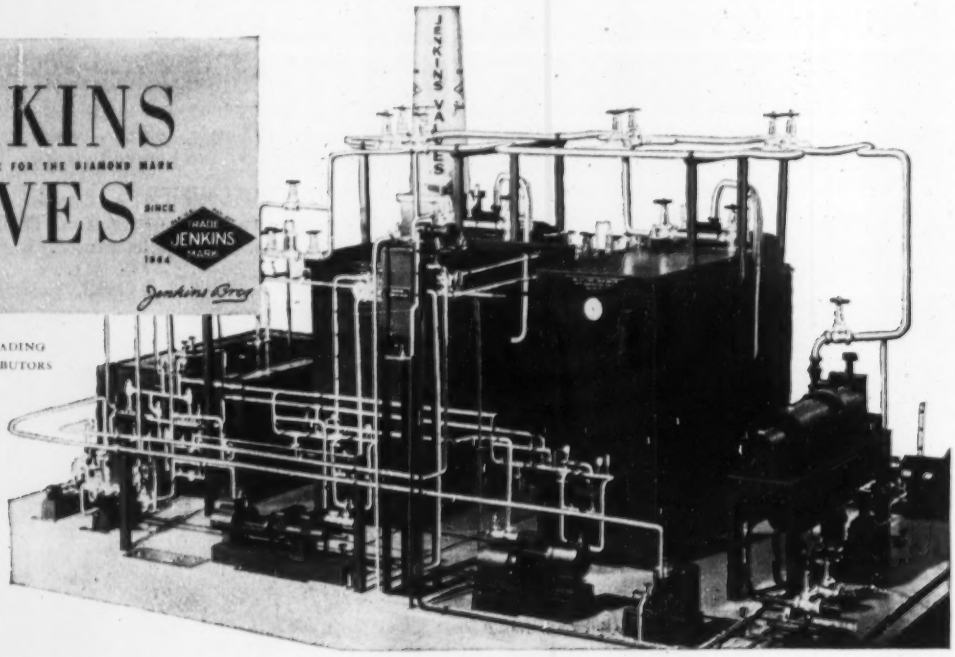
JENKINS VALVES

LOOK FOR THE DIAMOND MARK

SINCE 1864 TRADE JENKINS MARK

Jenkins Bros.

SOLD THROUGH LEADING INDUSTRIAL DISTRIBUTORS



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THE CONSTRUCTION WEEK

STRENGTH FOR THE CITIES—You can find further support for the thesis that the cities aren't set to die yet (ENR Feb. 18, p. 181) in that memorandum report of the Highway Research Board committee studying parking. Said the committee (working under an Automotive Safety Foundation grant):

Study of large department stores indicates that the reason they establish suburban branches is to expand business, reach new customers, not to counteract the effect of downtown parking inadequacies. Downtown locations still offer advantages to the shopper that outweigh parking in the suburbs: better merchandise selection, cheaper prices, and the possibility of combining several shopping and business errands.

HOUSING BUSINESS?—A source of construction business due to appear soon is in the military housing field. There's no formal program afoot (or money appropriated) at the moment—but the military is making no secret of these facts:

From 100,000 to 110,000 housing units are now needed near military installations to accommodate families of servicemen, both in the U. S. and abroad.

SAFETY UNDERGROUND?—The often-advanced theory that the only real protection against air attack is to put vital installations underground is due for serious study again.

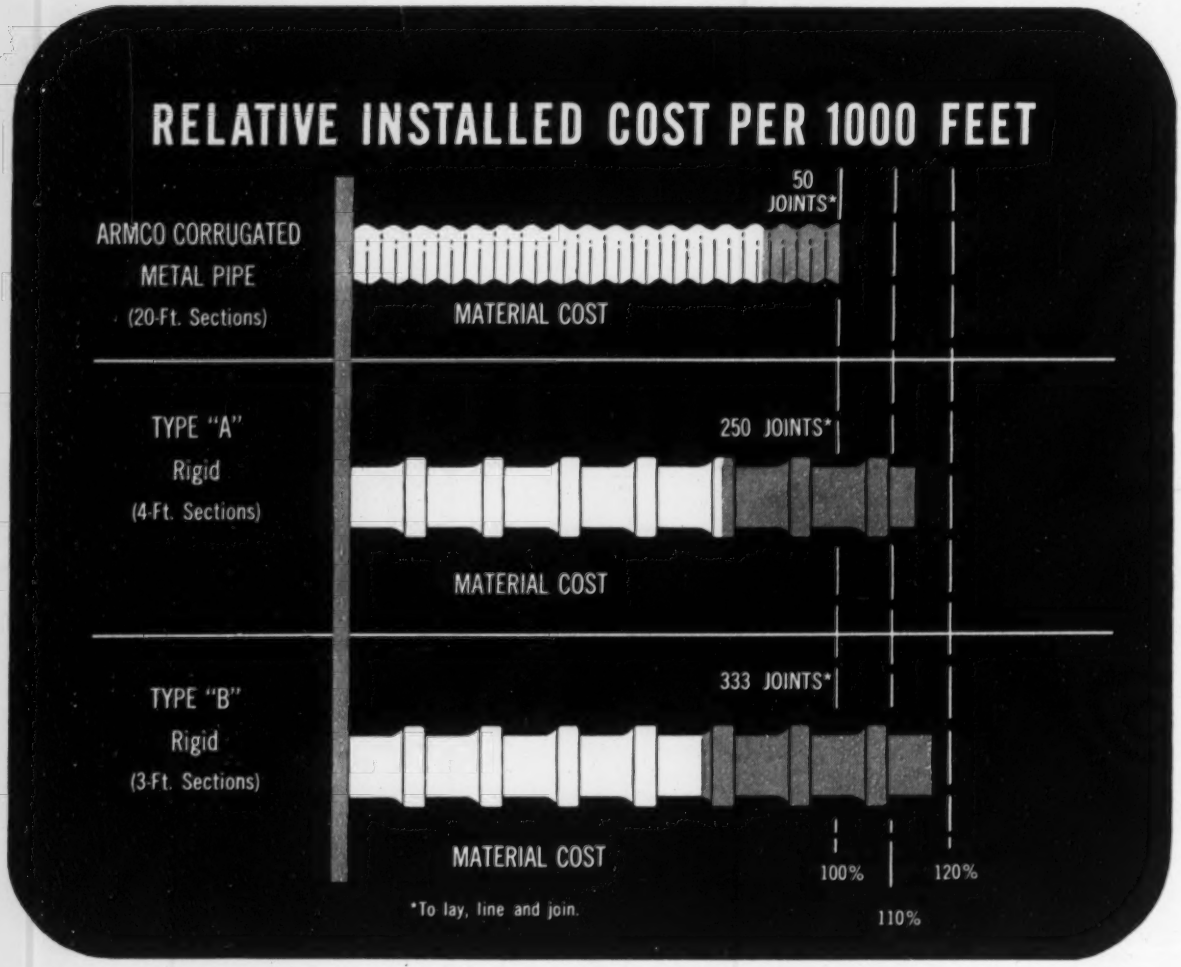
Michael Baker Engineering Co. (Rochester, Pa.) is now making a preliminary study of an abandoned limestone mine in western Pennsylvania, under a not-yet-consummated architect-engineer contract with the Corps of Engineers. Objective: safe storage for Air Force tools and machinery.

POSTPONEMENT—The often-postponed U. S. lawsuit against the Fallbrook, Calif., Public Utility District (ENR Nov. 6, '52, p. 19), has been put off again. It goes over from March 16 to Nov. 30, while California congressmen, U. S. Navy representatives and others seek further for a solution.

The case arose over the Navy's huge Camp Pendleton on the Santa Margarita River. The Navy, by virtue of its purchase of the old Rancho Santa Margarita, claimed it had prior rights to river water.

SAVE SUBURB STREETS—Thinly paved streets in mushrooming subdivisions in Arizona's Maricopa County may bring new construction truck controls.

Maricopa officials say subdivision streets are being pounded to pieces by heavy trucks serving construction activities in new subdivisions. Solution suggested: Bar trucks of more than three-ton capacity, force truckers to pay for damages they cause.



How do YOU figure drainage jobs?

It's the *installed* cost that counts! And that is where Armco Corrugated Metal Pipe saves you time and money. Let's see why. Long sections of Armco Pipe, compared to short-section rigid pipe, reduce the number of joints required by 80 per cent or more. There are fewer sections to lay, line and join with no delay for curing. Handling is easier. And thanks to the strength of corrugated metal, there is less chance for breakage. No wonder you can speed the job and save money in the bargain. Armco Corrugated Metal Pipe is supplied in diameters from 8 to 96 inches. Lengths range up to 24 feet. Bituminous coatings or ASBESTOS-BONDED Pipe protect against severe corrosion. Write for illustrated catalog. Armco Drainage & Metal Products, Inc., 1444 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

ARMCO DRAINAGE STRUCTURES

WASHINGTON OBSERVER

The Republican "anti-socialism" drive has hit its peak. And Democrats are rising to challenge what they charge is a gutting of both public housing and the Tennessee Valley Authority.

The fight centers in the Independent Offices Appropriations Bill voted in the House this week. The first round has been fought—when the House took up its committee's recommendations cutting drastically both TVA and public housing. But the battle won't be over until the money bill passes through the Senate and the conference that irons out House-Senate differences.

Public hearing: Opponents directed that the entire program for government-sponsored public housing construction be ended next year. They want only 20,000 units to be constructed this year, 15,000 next and then nothing.

TVA: Republicans are trying to force the TVA to pay interest rates on its power investment, and to give up its decision authority on how much utilities can charge for the electricity they buy from TVA. The motive is to limit TVA's expansion. For the same reason, the Republicans want to refuse TVA any money for more steam plant construction.

Democrats are strong in their effort to beat the attack on both fronts. They are only a handful of votes short of a majority in the House; have an actual majority in the Senate. The problem is: Can the Democrats get solid party unity? That will tell the tale.

•

House Rules Committee is delaying St. Lawrence to protect members who are facing primary fights and who don't want to be pinned down on the issue too soon. Rules chairman Leo Allen comes from a district that's against the Seaway, and he faces opposition in the primary coming April 13. Once this deadline is past, Allen can be counted on to vote for the bill. Prospects for approval of St. Lawrence in the House seem to be improving.

•

Another step toward picking site for Air Force academy was taken last week as the House and Senate finally agreed to compromise legislation. The bill they agreed on calls for the Air Force Secretary to appoint a five-man board to advise him. If the board is unanimous on a site, that's it. If they can't agree on one, then they recommend three and the Secretary will select one.

Of the total $126 million authorized the measure makes $26 million available during fiscal 1955. Also, conferees changed earlier provision calling for site selection within 45 days of effective date of legislation. Law now says Secretary must act "in reasonable time."

•

People seeking more state authority in labor disputes got no assist from Eisenhower's statement on "states-rights" changes in the Taft-Hartley Law. The President suggested three things: that a governor should be able to act if a dispute endangers citizens of the state; that federal law should not bar police action to maintain order; and states should be able to take over where the federal law does not apply.

Taft-Hartley gives the federal government jurisdiction where state laws cover the same ground—and Eisenhower pointedly omitted asking for any change to give the states more authority. Secretary of Labor Mitchell is given credit for holding out against giving any aid to the states-righters in this field.

•

Anti-recession action—if needed—won't come from Eisenhower's team before mid-summer. Theory is that for various reasons, March isn't a good month—that this year there's good reason not to expect an upturn in business until some time along in early summer.

The decision to wait is a victory for Treasury Secretary Humphrey. All along he has said that budget balancing is the most important thing—and that the time is not yet for anti-recession action.

Congressmen facing re-election will build up the pressure for action. They see unemployment rising and business turning down—at a time when the word from the home folks is that these are to be the big issues this fall.

Photo by Offie Lites—Pine Bluff

Diesel engine shed, St. Louis Southwestern R.R. Co., Pine Bluff, Ark. Roof and sides of "Century" Asbestos Corrugated. Erection Contractor: Mound City Erection Co., St. Louis, Mo.

Cotton Belt Railway gets long-lived, low-cost shed of

"Century"®

ASBESTOS CORRUGATED

This new diesel engine shed will serve the Cotton Belt Railway for many, many years—through all kinds of weather with little or no maintenance ever required. Such service is to be expected of "Century" asbestos corrugated!

This lifetime roofing and siding is made from asbestos fiber and portland cement, and so combines the advantages of both materials. It is strong, dense, and tough; will not burn, rot, or corrode; is maintenance-free, and *never* needs protective paint. It is easy to handle, cut, and erect, too.

Best of all, "Century" asbestos corrugated is one of the most economical materials you can use—low in application cost, low in maintenance expense!

If you are now planning construction for your company, find out more about the many advantages you get with "Century" asbestos corrugated. Write for complete information.

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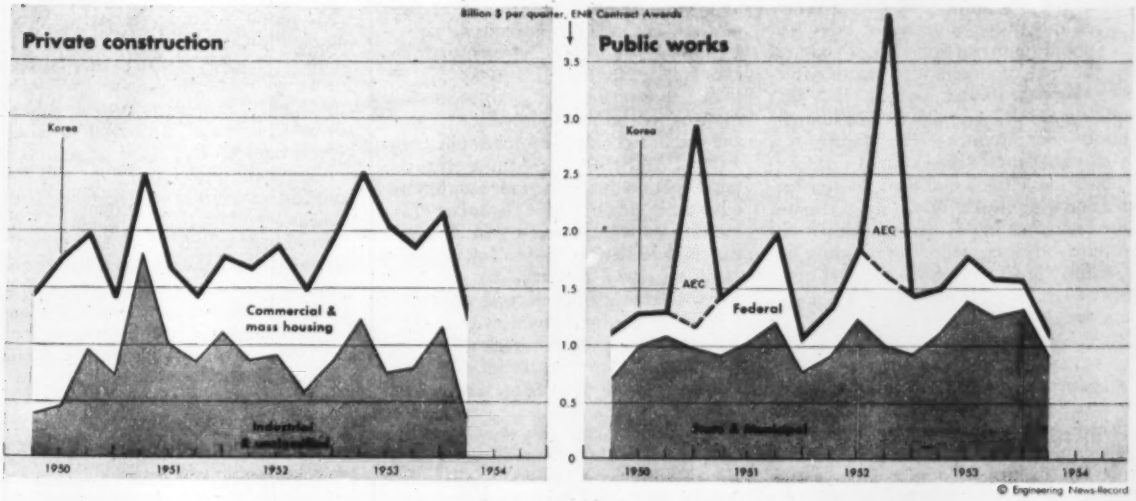


How's construction?—Not too bad

First quarter analysis shows downtrend but also indicates that industry is in good position to regain its stride

J. H. Webber
ENR Business News Staff

A look at the dollar performance of heavy construction for the first quarter of 1954 presents a picture of an industry that has slipped a bit from the record peaks of its previous year—but is moving along at a continuing fast, and healthy pace.

Undeniably, contract awards have been down for the greater part of the quarter—particularly when compared with the record boom in the first quarter of 1953. Federal work is down sharply—but state, county and municipal work is moving up. Industrial contracts have dropped sharply—but housing holds its own. There is apparently plenty of money available, and the backlog of proposed work is building up pressure fast.

Part of drop in dollar volume is due to lower prices—14% below engineers' estimates in one state. This would have the effect of reducing dollar volume even when physical construction was up or even.

Thus, in this first 1954 quarter, heavy construction contract awards totaled $2.5 billion—fourth highest in history, although 34% below the $4.0-billion figure for 1953. An upturn in the last week of February continued through March. And March awards topped the low levels of the first two months by 22%.

Still another factor that makes the 34% drop less ominous is that first quarter '53 figures got an unusual boost from several multi-million-dollar contracts. For example, there was the $280-million power plant at Joppa, Ill., the $200-million Green Hills residential development in Cincinnati, another of $50 million in Columbus, and a $40-million atomic energy facility at Hanford, Wash.

• **Jobs well distributed**—Smaller jobs predominated in the $2.4-billion heavy construction contract volume reported by ENR over the last three months. Whereas dollar volume of contracts for jobs of $5 million or more dropped 67% from the first quarter of '53, awards for jobs of $5 million or less declined only 13%. Or to put it another way: Larger jobs accounted for 39% of the contract volume in the first quarter of 1953, compared with 19% this year; smaller jobs represented 61% in 1953 as against 81% now.

Thus, the pattern of awards so far this year has favored contractors' urgent need for a maximum of widely scattered job opportunities. For there can be no doubt that they are hard-pressed for new work and operating under severe competition.

State and municipal public works were least affected by the first quarter downturn and remain the most promising source of new heavy construction work. Though contract volume in this category was down 19% in the first three months, private awards declined 43% and federal plummeted 45% from the level of first quarter '53.

While March awards for all three categories were 18% under those for the same month a year ago, the 22% increase over the first two months of this year is seen as the start up. It represented a 30% increase in private contract volume and a 22% gain in state and municipal. Federal awards, however, slumped 24% below the January-February level—probably to their rock bottom for the year.

• **The bright spots**—There are several good reasons for expecting state and municipal contract awards to continue their upswing in the months ahead. For one thing, they have a seasonal pattern, something that is lacking in the ENR series for private and federal awards.

State highway budgets offer another basis of optimism. An increase in the neighborhood of 20% over '53 is indicated in preliminary and incomplete returns from ENR's annual survey of state highway department budgets.

Still another favorable factor is the

. . . How's construction

heavy volume of municipal bonds offered for sale thus far this year. Sales in the first quarter totaled $460 million, only 6% under the record established in the first quarter of last year.

School construction bonds offered in the first quarter added up to a record $396 million, topping the first quarter '53 offerings by 40%. Highway bond sales are up 47%; waterworks, 10%; and unclassified capital improvements like city-owned utilities and recreational facilities, up 24%. Demand for financing has fallen off sharply for public housing, which, excluding refunding, is off 74% from the first quarter of last year. Bond issues for sewerage are down 40% and for bridges, off 89%.

• **Industrial hard hit**—A sharp drop in industrial building and unclassified private work like pipelines and transmission facilities is primarily responsible for the private contract curve (see chart) dipping to the lowest level for any quarter since 1950.

Industrial awards are off 67% from the first three months of last year. But, again, the decline can be qualified by the fact that there were several unusually large jobs put under contract during the first quarter of '53. The volume of awards for jobs of $5 million or more fell by 84% for projects of $5 million or less, 32%.

But, the volume of private contract awards has not been without its strong point. Again, that's commercial building—up 20% over first quarter '53.

The $250-million Cincinnati and Columbus housing projects in 1953 accounted for practically all of the 26% decline in housing awards from the first quarter of last year. Otherwise volume in the first three months of this year would have come within 4% of the same period last year.

• **Reaping the contract harvest**—Current construction activity reflecting (through work put in place figures) the near record contract awards reported by ENR last year—has Washington economists beaming. In fact, it seems to be the strongest of the basic elements in the economy. Department of Commerce and Bureau of Labor Statistics report construction put in place during the first two months of the year at a record high.

However, this year's slow start in heavy construction contract awards is being reflected in key barometers of the construction industry despite the high rate of work being put in place. Figures on employment and on manufacturers' shipments of basic materials have been tending downward.

• **Turndown indicators**—Employment in contract construction in January and February averaged 2% under the first two months of 1953 (see also p. 28). Yet, all through the last quarter of '53, monthly employment figures reported by BLS were higher than those for the corresponding months in the previous year.

Portland cement shipments in January were 18% under those for the same period of '53 and reinforcing bars were down 24%. Lumber shipments also were down 14%, although the decline attributable to construction can't be traced directly.

Fabricated structural steel shipments are holding about even with a year ago, showing a 0.4% increase over '53 for the first two months of this year. Bookings show only a 0.6% dip from last year.

Plywood is the only key construction material that is running well ahead, with production up 7.5% over '53 for the first 12 weeks of this year. However, new orders for plywood in February and the first two weeks of March were well below the high levels of the same period in '53.

• **Contractor failures**—The first quarter decline in new business accentuated the plight of the contractors who have been finding the going rough under the sharp competition of the past year. Failures during the first two months of this year totaled 195, up 19% over the like period last year. Total liabilities are up 21%. According to Dun & Bradstreet, failures were continuing to run high in the first two weeks of March.

Surety companies have been showing larger losses on contractor bonds since the fourth quarter of last year.

Keener competition, of course, is getting applause from the customer. The Arkansas Highway Commission, for example, finds itself almost a million dollars ahead in its first quarter lettings because of bids running 14.2% under estimates. The commission reports an average of slightly more than eight bids per job, with a large number of out-of-state contractors participating.

• **Backlog builds up pressure**—Proposed heavy construction projects have gone into the backlog at a fast clip during the first two months of this year. While total estimated cost of these jobs was less than the value of the heavy inflow during the first two months of '53, it is significant that February '54 marked the fourth consecutive month of substantial backlog growth. At the same time, projects from the backlog are going under contract at a reduced rate. Thus, there is a pressure building up that holds promise of forcing an upturn in contract awards in the second quarter.

• **No pump priming in sight**—What countermeasures the federal government may take against the current downturn in business can't be determined until Administration economic advisors have had a chance to study March figures. But, it is certain that public work pump priming will not figure in any initial anti-recession program.

As long as construction activity continues at its present brisk pace and demand for homes holds up, Administration economists can see no advantage to increasing public works. Furthermore, new public works money would upset budget calculations and a balanced budget is a cornerstone of the fiscal and tax policies which the Administration hopes will be sufficient to stem the tide against recession.

Utilities offer to help finance Green Peter Dam

Pacific Power & Light and Mountain States Power Co., now in process of merging, have offered to finance power facilities for Green Peter Dam on the Santiam River in western Oregon if Congress will implement the flood control project authorization.

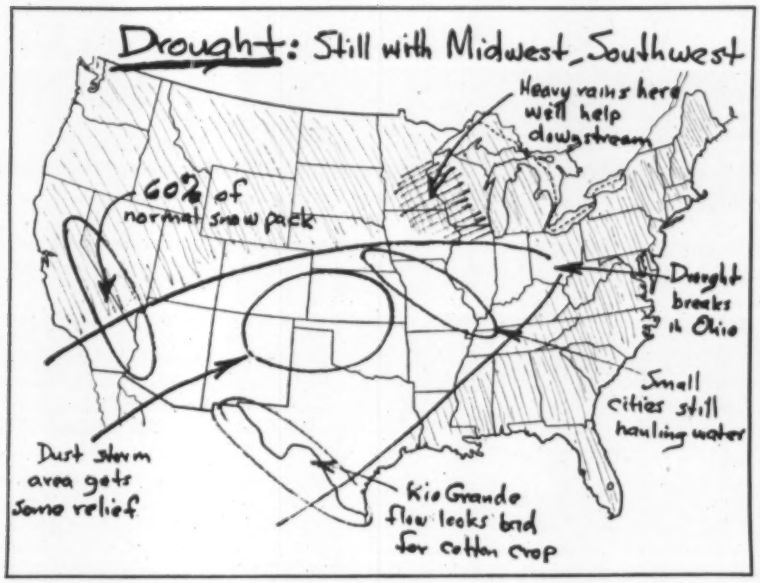
The offer was reported at a hearing before the House Public Works Committee by officers of the South Santiam Development Committee, an Oregon organization working for flood control.

The Corps of Engineers estimates cost of the main structure and a re-regulating dam at $47 million. If power phases were authorized, they would have a 96,000-kw capacity.

The authorization in the 1938 Flood Control Act calls for a 370-ft high, 1,180-ft-long rock fill type embankment structure with central impervious earth core. Site is on the Middle Santiam River four miles above the confluence with the South Santiam.

If power is authorized, the Corps' recommendations call for a power tunnel and a plant at the toe of the embankment. Plant would have two units of 40,500 kw each and operate on a 40% load factor, necessitating re-regulation facilities. The re-regulating dam would be at White Bridge, three miles downstream. Power authorization would call for 52,000 acre ft of storage allocated to generation and 270,000 acre ft to flood control.

Cost estimate for the dam, as authorized without power, is $37,030,000.


Drought: Still with Midwest_Southwest
Heavy rains here will help downstream
60% of normal snow pack
Drought breaks in Ohio
Small cities still hauling water
Dust storm area gets some relief
Rio Grande flow looks bad for cotton crop

Drought grip slips a little, but still holds over wide area

Spring rains settle dust, but water-short area remains below requirements—U. S. begins release of impounded flows

An ENR Staff Report

With spring came the rain to settle the dust over parts of the Midwest and Southwest last week. But much more rain will be needed if the drought that has plagued different areas from six months to six years is to be broken.

Spring rain fell in torrents on upper Midwest areas a week ago (3 in. in Grand Rapids, Mich.; 3.5 in. in Chicago; 4 in. in LaSalle, Ill.), and in Ohio the drought was reported pretty well broken, with water flowing over dams at Columbus for the first time since last August.

But although Ohio streams resumed normal flow, Ohio groundwater was reported 7 ft below normal level. While Iowa farm lands had first light then heavy rains to moisten their surface, soil samples taken to depths of 5 ft have shown deficits of 7 in. and 12 in. of moisture. While hopes rekindled as the first real rain in months fell on east Kansas and Missouri, dust still drifted over parched lands.

• **Not enough**—Wherever it rained, in the broad area of the U. S., sketchily outlined on the map above, there was still need for more of the same.

The Southwest had it the worst. Texas has a drought that has built up during five years. Houston is reportedly in its worst drought in 43 years with rainfall so far this year one-third of normal. (Houston is bringing in a new water supply, and a longer-range plan is developing—see p. 43.)

In the Rio Grande Valley in New Mexico, Elephant Butte reservoir was virtually a mud flat last week. And downstream, near Laredo, Tex., the U. S. share of water stored behind the new international Falcon Dam had dwindled to below 200,000 acre-ft, with complete exhaustion of the supply predicted for mid-April. Valley cotton growers are hard put for water, and their peak demands are still to come.

• **Wind and dust**—It was a combination of drought and abnormally high wind velocities that kicked up the dust storms of recent weeks over 11,000,000 acres of the 25,000,000-acre southern Great Plains. Winds of 70 and 80 mph were recorded (30 or 40-mph winds are usual for this season), and last week, to top it all off, tornadoes revisited Texas, Oklahoma, Arkansas and Missouri.

The area hardest hit by wind and drought is the old dust bowl of the 30s. But this time the effect is less severe, if somewhat more widespread. Last month's dust storms were not of the intensity of those that darkened East Coast cities in the 30s—for two reasons: Much has been done by farmers and the U. S. Soil Conservation Service to keep dust storms from happening. And when they do happen, much is done by way of fast action and control—emergency tillage.

Between 1942 and 1948 about 4,000,000 acres never cultivated before were plowed up for wheat and cotton. Only in a wet year will some three-quarters of this bad-risk area produce a crop. This poor land and the "suitcase farmers" who live on it only during planting and harvesting time, are largely to blame for the dust.

In eastern Colorado, west Kansas, west Oklahoma, east New Mexico and the Texas Panhandle, it is the farmers who now feel the drought. In eastern Kansas, Missouri, southern Illinois and elsewhere the drought has become and remains a municipal problem.

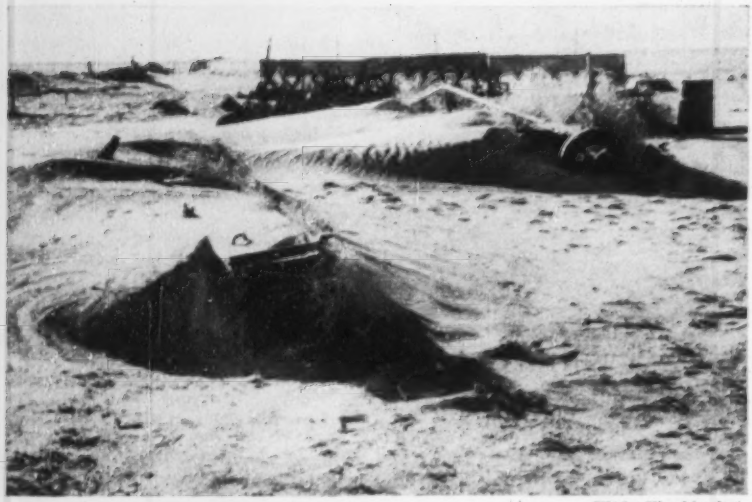
• **Illinois checks up**—According to the Illinois State Water Survey Division in Urbana, southern Illinois was about as dry early last week as it could expect to be once every 50 years. Deficiencies range from 10 to 15 in. of rainfall and the affected area reached as far north as Lincoln—about 30 mi north of Springfield. Some areas of southwest Illinois haven't had substantial rainfall since the fall of 1952.

Sixteen major Illinois communities have taken emergency measures to bolster their dwindling water supplies; 28 others are perilously short on water and don't permit such uses as lawn sprinkling or car washing. Among hardest hit communities is Pittsfield (pop. 3,500) in the southwestern part of the state, which has had to haul in about 100,000 gal per day from Missouri, on the other side of the Mississippi. Effingham (pop. 6,900) in central Illinois first ran a temporary pipeline to tap the Embarrass River but eventually had to put a 20-mi emergency line in service to get additional water from its neighboring town of Greenup. Some communities are hauling in water by tank truck.

Frozen ground has reduced penetration of rain into ground so far this year—and the prospects for restoration of normal underground moisture by summer appear unlikely, according to the Illinois State Water Survey.

• **Missouri area short**—Drought in the St. Louis area is now in its third year. Precipitation since the beginning of 1952 has been about 30 in. short of normal. Recent rains have helped, but drought is not considered over.

The St. Louis metropolitan area, near the confluence of the Mississippi and Missouri Rivers, has escaped serious water difficulty (city system has been pumping up to 258 mgd in summer). Sprawling, rapidly growing St. Louis County had sporadic water shortages the past few summers; re-



Wide World photo

IT'S DUST, NOT SNOW—Snow is what east Colorado farmers want; dust is what they've got.

. . . Drought grip slips a little

strictions on lawn sprinkling, etc. were imposed. St. Louis County Water Co. started a three-year, $10-million expansion program in 1952 to achieve 75-mgd capacity. This was not ascribed to drought but to growth.

Springfield, Mo., has suffered. The city has been forced to cut its water consumption by a third. Springfield Water Co., has hired a Denver concern to do some cloud-seeding and recently asked permission to build a second reservoir on Little Sac River at an estimated cost of $2,340,000.

Hauling water from urban sources to farms has become widespread in eastern Missouri. In one Missouri town last month, farmers were hauling an average of over 10,000 gal a day, from a fireplug by city hall.

• **Smaller dent in Kansas**—Farther west, in eastern Kansas, rain fell in quantity last week for the first time in months: Kansas City had 1.37 in. in 48 hr. Olathe, Kan., (ENR Mar 4, p. 22) had 1.41 in., and water in Olathe Lake was up 4 in., but the parched soil permitted but little runoff; and the town continued to haul water by tank car from Kansas City, as it has for weeks.

Consensus of Kansas farm agents is that only a small dent has been made in the state's drought, in spite of rains last week totaling over 2 in. at Council Grove, 1.91 in. at Emporia. Western Kansas had still been bypassed by rains at the weekend, and the dust had not settled yet in some spots.

At a meeting last week in Topeka, V. C. Fishel, eastern Kansas director of the U. S. Geological Survey, said 20 towns in eastern Kansas have only enough water for a few weeks' use, and more than 12 do not have enough to get through the summer unless general rains occur. He commented that the shortage today is worse than that of the drought in 1934 and 1936, mostly because of the great increase both in population and per capita use.

• **U. S. help**—Hope of assistance came to irrigation farmers in the tri-state corner of Colorado, Nebraska and Kansas last week in an announcement from Washington. Secretary of Interior McKay said they may buy surplus water stored in five Bureau of Reclamation reservoirs in the Kansas River district. The reservoirs are Bonny on the Republican River in Colorado, Swanson Lake on the Republican in Nebraska, Enders on Frenchman Creek in Nebraska, Harry Strunk Lake on Medicine Creek in Nebraska, and Harlan County on the Republican in Nebraska. Cedar Bluff reservoir, on Smoky Hill River in Kansas, may be added to the list. Reclamation Commissioner Wilbur A. Dexheimer said farmers who have water rights to natural flows of streams within the Kansas River district can benefit by purchase of supplemental water. Farmers qualified to buy the water would divert it onto their lands or pump it from streams after the water had been released from upstream reservoirs.

• **Basin's action**—Meanwhile, farther up in the Missouri Basin, the Army Engineers at Omaha last week began releasing water from upstream mainstem dams to meet the unusually early spring demand for water.

Navigation companies and downriver communities concerned over municipal water supplies have asked the releases.

To meet demands, the reservoir control center of the Army Engineers at Omaha on Mar. 22 began stepping up reservoir releases from the nearly completed Fort Randall reservoir in South Dakota. Last week increased flows were scheduled from Fort Peck reservoir in northeast Montana and Garrison reservoir in North Dakota.

The released water approximately will triple the volume of water in the river over that of the winter months. For example, it will insure a flow of about 30,000 cfs at Omaha and about 35,000 cfs at Kansas City, important river navigation ports. This compares with a natural flow of about 10,000 to 15,000 cfs.

The schedule of releases: Fort Peck, which has been averaging about 4,000 cfs, to be stepped up to about 10,000; Garrison, from 10,000 cfs to about 21,000; Fort Randall, from 10,000 to 25,000 cfs.

Soaked by a "once in 25 years" rain, Arizona has put aside any thought of water crisis this year. A storm March 21-23 cascaded an estimated 200,000 acre-ft of storage into reservoirs of Salt River Valley Water Users Assn. system. It was the greatest single soaking since August 1951. In the Tucson area nearly 10 in. of rain devastated the Sabino Canyon recreation area. Forest Service officials estimated it will take two years to repair the damage.

• **West Coast concerned**—In the Far West, California's Division of Water Resources reported danger of a water-short summer ahead for southern sections of the state. Reservoirs in the Central Valley were only 55% full on Mar. 1 and not likely to fill up during the snow-melt period. Poor snowfall on the southern Rockies has meant a snowpack 60% of normal this year, as of Mar. 1 (snowpack in the northern Rockies, on the other hand, measured 120% of normal).

The big question is: "How severe will the coming summer drought be? It depends largely on how well spring rains across the country ease up the unusually persistent winter drought.

For Texas and other southwest areas where current drought conditions have built up over several years of subnormal rainfall, it will take more than rain. Some grandiose engineering works are in the cards.

But for right now, rain would do.

Power partnership goal spelled out

American Power Conference gets federal officials' views on Administration's 'new look' at multi-purpose projects

The Eisenhower Administration's goal of inducing closer cooperation between federal agencies and private industry in hydro developments was spotlighted at the 16th annual American Power Conference in Chicago last week.

Interior Secretary Douglas McKay keynoted a session of the three-day conference, sponsored by the Illinois Institute of Technology, that dealt with the Administration's power partnership concept. His remarks were amplified by the viewpoints of the Army Engineers and the Bureau of Reclamation.

"Desirable large-scale hydro power combination," he said, "is private financing of flood-control, irrigation and navigation improvement. The local people, generally, should make the decisions, rather than the federal government.

"Capital costs of any federal investment in irrigation, naturally should be returned by the local interests from irrigation and power sales, but the partnership concept will lessen federal control over regional business, increase the taxable income, and reduce the period over which federal funds will be tied up."

The policy restores to the local people a responsibility of supplying their own energy requirements. And it definitely removes the Department of the Interior from its previous role as exclusive arbiter in the construction of dams, as well as the generation, transmission and sale of electrical energy in any area, basin or region, McKay pointed out.

He assured his listeners that the department, which he heads, has no intention of abandoning its responsibility in the comprehensive developments which are too large or too complex for any construction by local, public or private enterprise.

• **Allocation agreement**—Secretary McKay told the assemblage that agreement has just been reached between the Federal Power Commission, the Department of the Army, and the Department of the Interior with respect to a uniform and equitable method of cost allocation for federal projects."

Reclamation partnership policy was explored further in a technical paper delivered by H. B. Taliaferro, Chief of the Power Division, Bureau of Reclamation.

"On a multi-purpose project it is true the various purposes are competitive to a certain degree," he declared. "But thorough and careful planning and forecasting during the permanent operating lifetime will pay dividends. The end result will be operating schedules which practically can guarantee complete flood control up to the capacity of the reservoir—with astonishingly small sacrifice in such benefits as irrigation and hydro power."

• **Hydro can pay for all**—"Hydro power is the paying partner in big multi-purpose projects," said Talifaferro." Revenue from power sales almost invariably covers the allocated costs and contributes as well to paying for other services such as flood control. This factor is a major reason why many of our large multi-purpose projects are not only successful from a purely economical standpoint, but are self-liquidating over a reasonable period of time."

• **Army Engineers viewpoint**—The Army Engineers concept of river development was presented by Brig. Gen. E. C. Itschner, Assistant Chief of Engineers for Civil Works, who stressed the fact that developments on each river may be carried out harmoniously or at cross-purposes, but they can not be separated. "Regardless of how a river may wander from community to community, crossing state lines and serving many interests on the way, it remains a hydrologic geographic unit," he said.

Over the last several years, General Itschner continued, a number of federal agencies have been given responsibilities for certain rather specialized segments of water-development. As a result some of our federal water resource development policies—including a few relating to hydro power—have been neither clear-cut nor consistent. Each agency has progressed by its own route toward the common realization of the necessity for integrated comprehensive development.

"One of the formost objectives today—of all federal agencies dealing with water resources—should be to reconcile, unify and coordinate their programs and policies as far and as fast as possible. At the same time, we seek a better, sounder definition of the role of the federal government with respect to other institutions, both public and private, working in the same field," General Itschner said.

Point-supported dome concreted

Concrete for the thin-shell dome capping a $1.5-million auditorium at Massachusetts Institute of Technology, Cambridge, Mass., has been placed and is now being cured. Supported at only three points, the dome, one-eighth of a sphere, spans 160 ft. Segmental window walls will run along the edges of the dome (where the tarpaulins hang, in photograph). Roofing will be lead-covered copper plates over the concrete. Eero Aarinen & Associates, are architects, Ammann & Whitney, engineers, and George A. Fuller Co., general contractor.

Atom sub 'launched' into test ball

Construction men took six hours (after three weeks of preparation) to move a 1,300-ton submarine hull section into the 225-ft-dia atomic power test sphere at West Milton, near Schenectady, N. Y. (ENR Mar. 4, 1954, p. 40).

The hull's section is a full-size model of USS Sea Wolf, the Navy's second atomic-powered submarine.

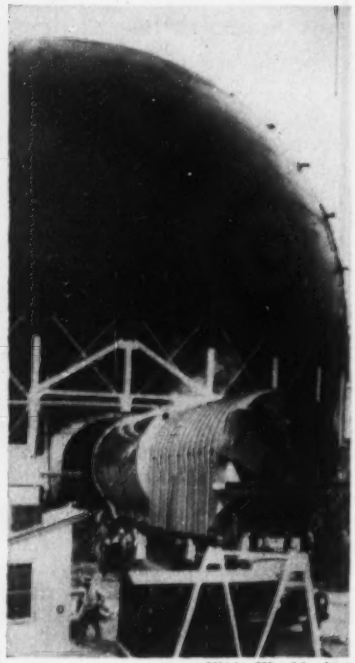
Built outside the big sphere by Electric Boat Division of General Dynamics Corp., Groton, Conn., the test section was "launched" with hydraulic jacks through a temporary 30-ft hole. The job was done by Spencer, White and Prentis, Inc., New York foundation contractor.

The sub had been built on wood chocks, like any ship except that the keel was level, rather than inclined as it would be in a normal launching. Moving crews replaced the chocks with two runner beams—each a pair of 10-in. WF beams with their inner flanges an inch apart. These rode on high-carbon steel rollers that transferred the sub weight to grade beams extending inside the sphere. The grade-beam assemblies had the same cross-section as the runner beams: two 10-in. WF sections. The WF's in each grade beam were connected to each other every 4 ft by pairs of bolt-and-pipe spreader ties located at top and bottom of WF webs.

The grade beams rode on existing concrete slabs at the sub erection site and inside the sphere. In a 90-ft gap between the slabs, the contractor supported the beams at 5-ft intervals on bents, each consisting of a steel cap and two steel piles driven 35 ft to rock.

Rollers were of 2-in. dia, held for alignment in groups of three by simple channel-iron carriages. Each of 100 carriages consisted of two pieces of 3-in. channel, placed parallel and connected with light angles. Three 2-in. holes, spaced at 10 in. along each channel web, held the carriage's three rollers, which were 28 in. long. Carriage channels rode outside the runner and grade beams, acting as retainers to keep the rollers on the beams. During the move, when a carriage emerged behind one of the sub's runner beams it was brought up to the front, to go into action again.

Movement was powered by four hydraulic jacks with 5-ft stroke and spring-assisted retraction. Jacks were fixed to a yoke across the rear of the sub, and to heel blocks that gripped the grade beams. When jacks had pushed their full 5 ft, grips were released, jacks were retracted and the grips took a new bite for the next push.



Wide World photo

Pushing rate was 40 ft an hour; total distance of the move was 222 ft.

The entry hole had been cut into the steel sphere after it was fully erected and air-tested. Now the section that was removed will be welded back in place and all welds radiographed for soundness. A sphere-support leg, removed for the "launching," also will be replaced.

Contract price for the move was $79,000.

Engineer license change fails in N. Y. legislature

The second attempt within two years to amend New York State laws to permit corporate practice of civil engineering died quietly on the closing day of the state legislature.

The amended law (the Carline-Milmoe Bill) would have permitted corporate practice of engineering, under a number of specific requirements as to responsibility of officers in charge of engineering work and corporate organization and reporting (ENR Jan. 7, p. 21). Excepting for the few that qualify under the "grandfather clause" of the state's 34-year-old licensing law, corporations are now forbidden to practice engineering in the state. A group of 34 corporations, joined as the Committee on Engineering Law, backed the amendment. The New York State Society of Professional Engineers provided major opposition, on the ground that corporate practice would endanger the principle of personal responsibility now inherent in engineering practice.

$87-million sewage works ready for construction

Pittsburgh, Pa., polluter of the Ohio River right at its source, was nudged for action on its $87-million sewer and sewage treatment plant last week as the Ohio River Valley Water Sanitation Commission moved into town for a regular quarterly meeting.

In a progress report to Orsanco, John Laboon, chairman of the Allegheny County Sanitary Authority, said plans for the novel sewage works to serve Pitsburgh and 63 neighboring communities (ENR Oct. 1, 1953, p. 30) are to be submited for state approval, expected in a month.

"The project will be ready for contract letting just as soon as someone makes up his mind to go ahead," said Laboon.

The key to "someone" was understood to be Pittsburgh's Democratic Mayor David L. Lawrence, who a year ago opposed going ahead on the project because of high interest rates then prevailing. Mayor Lawrence greeted Orsanco last week with some noncommittal and less-than-optimistic words of welcome; he did not stay to hear the interstate commission reassured that Pittsburgh would not be allowed to delay Republican Pennsylvania's clean-streams effort.

Trinity River hearings

A subcommittee of the House Interior and Insular Affairs Committee will conduct hearings on the proposed $200-million Trinity River water and power project in California April 16 and 17. A hearing will be held in Redding in the northern part of the state April 16 and in Fresno in the San Joaquin Valley April 17. The Trinity project, authorized by former Interior Secretary Oscar L. Chapman, would provide water to firm up the supply in the Sacramento River Valley and to supplement the supply on the west side of the San Joaquin Valley.

Frying Pan project

The Budget Bureau has given Administration blessing to the proposed $175-million Frying Pan-Arkansas project in Colorado. This is a transmountain diversion project which would transfer water from western Colorado to the Arkansas River Basin in eastern Colorado and would store additional eastern slope water for supplemental irrigation use on 320,000 acres. The project also would develop more than 500,000,000 kwh of hydro power annually.

Congress tackles President's housing plan

The House of Representatives was to begin deliberations this week on its version of the Administration housing bill, with expectations that it would go along with essential provisions of the President's program except for public housing.

A battle over the public housing part of the program has already begun as a result of the House Appropriations Committee coming out with a recommendation that starts be limited to 20,000 in fiscal '55, 15,000 in fiscal '56 and then nothing.

The new basic bill on housing has the approval of the House Banking Committee, and chairman Jesse Wolcott hopes to steer it through the House at a good pace.

The Senate Banking Committee completed hearings on the Administration bill last Thursday. But the chairman—Sen. Homer E. Capehart—deferred committee action on the measure until after witnesses have testified on an amendment that he will introduce soon.

• **Air pollution amendment**—Capehart's promised amendment would add air pollution provisions to the measure. Expanding the urban renewal features of the Administration's bill, he proposes an additional title which would encourage cities to undertake smoke abatement programs. The added provisions would include both grants-in-aid to the cities for municipal programs and rapid amortization for income tax purposes to industries that install smoke prevention devices.

Hearings on the Capehart amendment are scheduled for April 13 and 14. That means the committee probably won't begin to vote on the bill until the end of the month. A Senate vote hardly can be expected before early May, with agreement by the two houses on all details of the final bill sometime around the first of June.

• **Dispute over public housing**—Republicans and Democrats differ sharply over the necessity of new authorizing legislation to carry out President Eisenhower's recommendation for 140,000 public housing units in the next four years—at a rate of 35,000 a year. Nothing on this point was included in the Administration's housing bill.

Republicans say that Congress should set the annual rate—as it has for the last four years—in the appropriation bill that provides funds for the Public Housing Administration. Democrats counter that the appropriation bill enacted last year stopped PHA from making any new contracts with local housing authorities and thus fixed a ceiling beyond which no new public housing units could be started.

A number of controversial proposals are expected to go through the House pretty much as the Administration asked.

The general provisions enlarging and liberalizing the regular mortgage insurance programs of the Federal Housing Administration have good chances for congressional enactment. Among them, only the proposal to give the President discretionary power to change mortgage requirements, including interest rates, for both FHA and Veterans' home loans seem likely to run into any trouble.

• **How House bill shapes up**—The bill now before the House contains provisions that would:

• Increase FHA mortgage ceilings and amortization periods, and lower the requirements on down payments, subject to discretion of the President, within limits set by the law.

• Let the President adjust interest rates for FHA and VA loans, as he thinks best, up to 2½% above the current yield on government loans.

• Make loan terms on existing homes equal to those used on new houses.

• Liberalize repair and improvement loans and permit FHA to insure such loans under open-end mortgages.

• Recharter Fanny Mae as a government corporation eventually to be owned, but not managed, by the private lenders who sell mortgages to it; the new agency would continue the one-for-one program, and it would support special housing programs like the one proposed for low-cost housing in urban renewal areas.

• Authorize something like 100% FHA insurance up to $7,000, with 40-year maturities and $200 down payments, for displaced families in urban renewal areas.

• Allow special FHA mortgage insurance for building or remodeling of housing in renewal areas.

• Authorize grants to aid metropolitan planning and urban renewal, plus money for loans to finance advance planning of local public works.

The bill will put heavy emphasis on urban renewal. Cities and towns would get aid on a broad basis for renewal programs and areas, provided they have workable general plans that include code enforcement.

Congressional scoreboard

Here is a report on major construction legislation now before Congress. This ENR service, charting the course of these and other measures yet to be introduced, will be published periodically. Status of the bills is traced by the following symbols: H—House of Representatives; S—Senate; i—introduced; c—in committee; r—reported on the floor; p—passed; K—in conference.

St. Lawrence Seaway	Sp Hr
Niagara power project	Hp Sc
Omnibus rivers & harbors & flood control authorization	Hc
Omnibus Housing (FHA, FNMA, public housing, etc.)	Hc Sc
McGregor highway aid	Sc Hp
Case-Ferguson highway aid	Sr
Judicial review of contract disputes (Wunderlich case)	Hr Sp
Big shopping	Sr
Lease-purchase of public buildings	Sr
Upper Colorado Basin development	Hc
Santa Maria project	Sc Hp
Reclamation projects over $5 million (to be made subject to congressional approval)	Sc Hp
Convalescent Hospital Bill	Hp Sc
Air Force Academy	Hp Sp, K

Jobs in the news

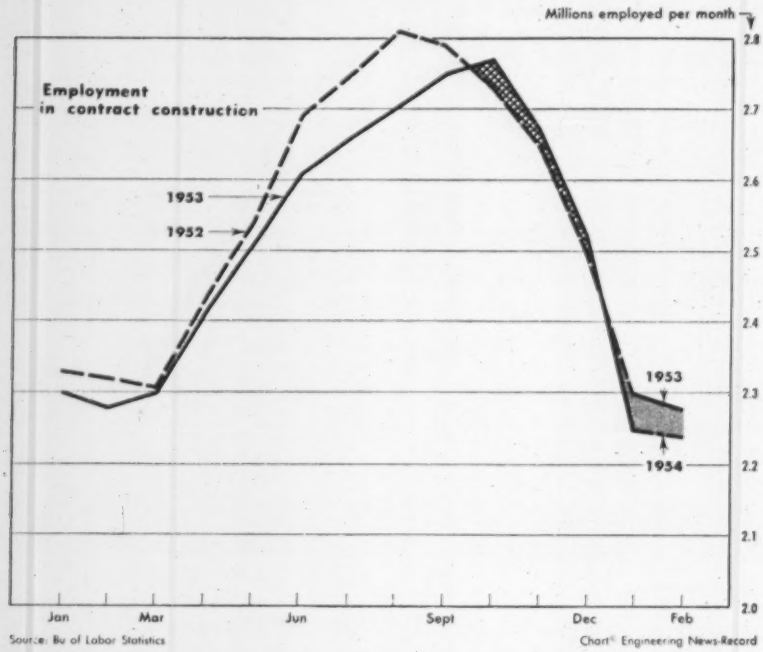
CELLOPHANE PLANT—An estimated $20-million plant for cellophane products at Covington, Ind., will be built by the Construction Division of E. I. du Pont de Nemours & Co., Inc., for the Olin Industries Inc., East Alton, Ill.

FERTILIZER PLANT—Design and construction of an $18-million Fertilizer chemical plant at Timpson, Tex., for United Chemical Co., Dallas, Tex., will be carried out by Foster-Wheeler Corp., Houston, Tex.

POWER PLANT—Contract to construct a $7.5-million thermal electric power plant addition at Wiscasset, Me., for the Central Maine Power Co., Augusta, has been awarded to the Sanders Construction Co., Portland, Me. Engineers are Jackson & Moreland, Boston, Mass.

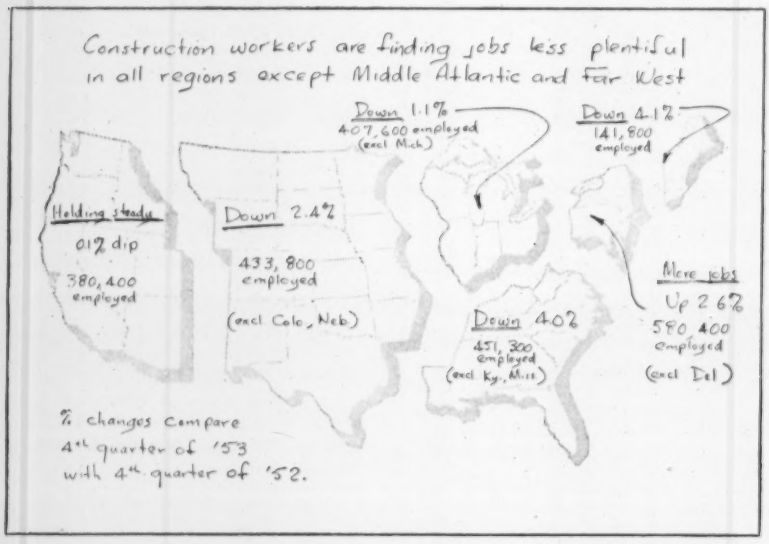
HOUSING PROJECT—A $5.4-million construction contract for the Governor Henry Horner Homes, Chicago, has been awarded to Sumner S. Sollitt Co., Chicago, by the Chicago Housing Authority. Skidmore, Owings & Merrill, Chicago, are architects.

CLUB BUILDING—Contract to construct a $4.9-million club building in Milwaukee, Wisc., has been awarded to Gebhard Berghammer, Inc., Milwaukee, by the Young Men's Christian Assn.



Source: Bu of Labor Statistics

Chart: Engineering News-Record



Job slump affects bargaining

Wage negotiations, getting under way across the country, seem to be following about the same pattern they did a year ago: Contractors are determined to hold the line, while unions are moving cautiously in drafting their pay proposals.

But there's a pressure on construction labor that wasn't felt to any degree last year. Work is tightening up. This means not only declining employment but also stiffening of bargaining attitudes by contractors who are watching pennies in their scramble for contracts.

• **Wages still up**—Wages are still going up, however. The few scattered increases reported so far average about 11 cents an hour, and range from 5 cents to 17 cents an hour. There are too few in the hopper to point to a trend, but ENGINEERING NEWS-RECORD's prediction earlier this year of average pay boosts of 7-10 cents an hour still seems a good guess.

New business in the first quarter of this year is starting off much more slowly than in the same period last year, when there was a rush of projects delayed by materials controls (see p. 21).

• **Jobs move down**—Although Department of Commerce estimates of all construction put in place in January and February of this year mark an all time high, it is significant that construction employment during the period was 2% below last year. This is a sudden reversal of the trend of total construction employment, which during the last quarter of 1953 had been higher than in the like period of 1952.

Meeker unions and more stubborn contractors: That's the national picture. Sectionally, the picture varies for the final quarter of 1953, as compared with the corresponding period of 1952.

• **Employment details**—In the Middle Atlantic states, employment was up, and in the far West it was holding even. In New England and in the South, work opportunities had dropped 4%.

In the Middle Atlantic employment showed an increase in each of three key states—New York, New Jersey and Pennsylvania. Construction jobs in New York were up 5%, while the other two states showed a moderate 2% rise. In the far West, a slight 1% dip in California and a 10% drop in Oregon were offset by higher employment levels in Washington, Nevada and Arizona.

In the region west of the Mississippi and east of the Rockies the employment picture was a 2.4% downturn. The key state, Texas, reported the number of construction workers down 3%. Minnesota and Iowa, however, showed an increase while Oklahoma was holding its own. Employment in other states in that area was down. That section of the country was hard hit by the cutback in federal work during '53. ENR contracts for federal construction let last year in this region dropped 38% below the '52 total.

Total employment in the Middle West was off only 1%. A 4% rise

in Ohio, where atomic energy plant construction is still playing a big role in keeping total employment high, partly offset declines in other states. Indiana jobs were off 10% and there was a 1% dip in Wisconsin (Michigan data was not available).

Construction workers in the South faced a 4% decline in the total number of available jobs, although things were brighter in Florida, Tennessee and Georgia. Employment in these three states was 3-6% higher. Commercial building was important in the added number of jobs in Florida and atomic energy construction helped keep things humming in Tennessee.

In New England, Massachusetts accounts for almost all of the decline with construction employment down 9% in that state. Connecticut was holding about even with a year earlier.

Strike scare

New York builders shudder as truckers wrangle

New York City's construction industry, long regarded as a model of mature labor-employer relations, learned two bitter lessons in last summer's two-month strike (ENR Aug. 27, 1953, p. 28) of building material truck drivers:

• No matter how close the liaison between contractors and construction unions may be, and no matter how effective the dispute-settling mechanisms, the whole setup is meaningless unless all groups affecting New York construction are bound by a workable agreement. Neither the striking truck drivers nor their employers had been integrated into New York's Building Trades Employers' Assn. or the Building and Construction Trades Council.

• Internal struggles for union leadership have a way of becoming strikes against employers. This, more than anything else, caused last summer's crippling walkout.

Members of the BTEA, who still shudder when they recall the cost of the strike, had a new scare last week. Turmoil within Local 282 of the teamsters union again reached the danger point, and only a yearning for responsible action—learned the hard way—by leaders of an insurgent movement headed off another strike.

• **Umpire overruled**—Pressure has been building up since last summer among the ready-mix concrete and sand and gravel drivers of Local 282. It was they who formed a core of opposition to the local's president, Johnny O'Rourke. The surface issues in their strike—pay and seniority—were submitted to arbitration after the New York construction industry had lost its two best building months of 1953.

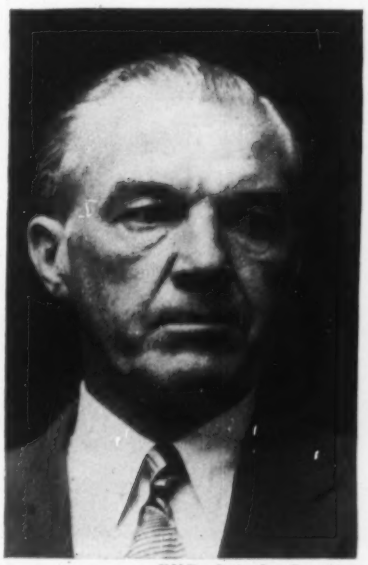
When the arbitrator's rulings were made known a few months ago, the employers boosted pay in compliance, but the truck drivers appealed the findings to the courts, insisting that the arbitrator had gone far beyond the agreed upon issues and had, in effect, written a whole new contract. A couple of weeks ago a justice of the New York State Supreme Court threw out the arbitration award in an extremely unusual decision, leaving the drivers and their employers just about where they were last summer before the strike.

Contractless, many of the ready-mix concrete and sand and gravel drivers clamored for a strike, but a handful of rank-and-file leaders kept them behind the wheel. The insurgents, still stinging under the lash of public censure after the 1953 strike, insisted that any walkout must be called by O'Rourke, who has been sitting on has hands since he was superseded at bargaining sessions last June by the rank-and-file spokesmen.

• **Still talking**—Members of the BTEA have considered ways of bringing supplier groups under their wing, and at the time of last week's strike scare—not fully over by any means—the spirit of unity was just beginning to spread among the building material firms.

Dealing with Local 282 was another matter, and there was little optimism and considerable perplexity apparent in discussions of how to effect compliance with a no-strike, no-lockout agreement by the feuding factions of the nearly bankrupt local.

So far, Dave Beck, teamster president, has made no direct move to settle the revolt in Local 282. He has neither supported nor disciplined O'Rourke, leaving uncertainty in the New York construction world.



ENR photo by Compton

JOHNNY O'ROURKE—Who's carrying the ball in Teamsters Local 282?

Labor briefs . . .

• **Sabotage suit**—A blanket order directed at "everyone concerned" and banning interference with a trucking company hauling slag for the Ohio Turnpike has been issued by a Youngstown court. The trucking company (Erskine & Sons, Inc.) filed suit against the Eastern Ohio Consolidated Dump Truck Operators Assn. after a six-week rate dispute slowed down slag hauling operations in the area. The charges: (1) Sand and dirt were thrown into machinery and vehicle engines; (2) nails were placed in the path of trucks; (3) various employes were threatened.

• **Complaint: City wages**—A test slated for the Ohio Supreme Court will decide whether municipalities must pay the prevailing wage scale to Civil Service employes working on public improvement projects. (Last February a Youngstown lower court ruled that the city does not have to pay skilled labor prevailing wage rates.) The issue was raised by a construction worker in the Youngstown Water Department. He was paid $1.81 an hour for operating heavy power equipment on a department project where the city's own crews were being used to install water lines. The union scale for the same job is $2.90 an hour.

• **Work week whittled down**—Some 14,000 construction employes of the E. I. du Pont de Nemours & Co. and its subcontractors at the Savannah River atomic energy plant in South Carolina have reverted to the standard 40-hr work week. The project workers started out on a 40-hr week in 1951—were raised to 54 hr in 1952—then reduced to a 45-hr schedule last September.

ENGINEERING NEWS-PICTURES

Wide World photo

United Press photo

SIGNS OF SPRING

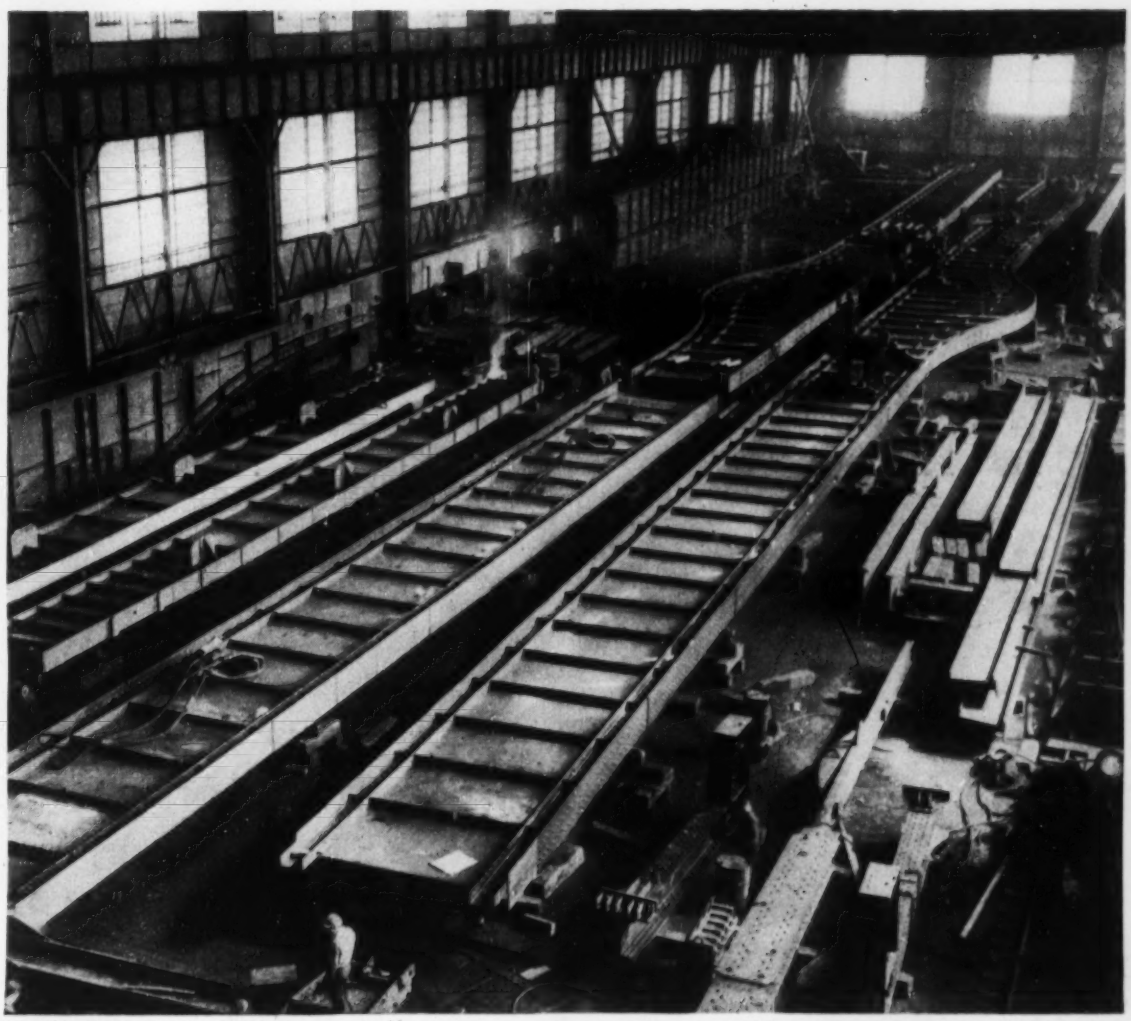
With the Baltimore Orioles' opening game of the season near at hand, construction on the Municipal Stadium at Baltimore, Md., has to move at a lively clip. Workmen at this stage were still pouring concrete to form stands that will raise seating capacity to 30,000. In a city that hasn't had a major-league team in several decades, one fan at least is making sure of a good seat.

ON THE LINE IN MOROCCO

At Sidi Slimane, one of the controversial Moroccan airbases, Arab laborers put in foundation forms for new buildings while in the background, B-47 jet-bombers stand on the operational line. The $66.7-million Sidi Slimane base is now almost completely equipped and ready for full operation (ENR Aug. 27, p. 20). Medium-range jet-bombers and ocean-crossing heavy bombers can be quickly launched from its 11,000-ft runway. Work on the North African base began in the spring of 1951.

NATURAL GAS FOR SOUTHERN NEVADA

Natural gas, long sought by industrial firms of southern Nevada, will soon flow through this $2.5-million pipe line begun in November of last year. The 10-in. pipe line is being laid by the R. H. Fulton Construction Co., of Lubbock, Tex., and extends 117 mi. from Topock, Ariz., to Whitney, Nev., and connects with the Texas-California pipe line.



BEGINNINGS OF A BRIDGE

These four haunch girders being fabricated at Bethlehem Steel Co.'s Pottstown, Pa., works, are for the new Garden State Parkway Bridge over the Raritan River in New Jersey. Largest of the girders are 137 ft long, 21 ft high and weigh 95 tons. Three railroad cars will be used to transport them. The bridge will be the longest along the 165-mile route of the $285-million parkway.

Wide World photos

PROGRESS REPORT: RICHLAND, WASH.

Less than a dozen years ago this stretch of sand and sagebrush was given over to the coyotes. Today, it is part of the booming town (pop. 25,000) of Richland, Wash., located in the heart of the government's atomic reservation. Businessmen at first hesitant about moving into Richland, through fear that it would prove only a temporary "war-town," have now shown such confidence that today, some 200 businesses serve the community's needs. This crowded parking lot, located in the new "uptown" district and with a capacity of 1,100 cars, already is too small for the fast-growing town.

U. S. Steel Corp. photos

CONTINUOUS PLATE GIRDERS of a bridge over the San Jacinto River, Tex., will have a 200-ft main span.

New span record set for welded girders

W. F. Smith
Houston, Tex.
Partner, Howe & Wise

The longest welded plate-girder spans in the U. S.—and possibly also in the world—have been erected in two highway bridges over the San Jacinto River in Texas. Both bridges have continuous steel girders with a 200-ft main span.

[Editor's Note—This exceeds by 6 ft the longest welded span of the Passarge River Bridge in East Prussia, Germany, a former recordholder (ENR May 14, 1936, p. 703.) There may have been longer welded plate-girder spans in Europe prior to World War II, such as the bridge over the Meuse at Ougrée, Belgium, with 213-ft main span, but these were destroyed during the war. No reports have been received of longer welded spans having been built since. Riveted plate-girder spans have, of course, been carried to considerably greater lengths, the 375-ft spans of the Passaic River and Hackensack River bridges on the New Jersey Turnpike being the longest in the U. S. (ENR Jan. 17, 1952, p. 30.)]

The new welded bridges are included in an 8,300-ft long highway crossing of Lake Houston, a water-supply reservoir being built for Houston, about 20 miles north of the city. Because of the terrain, the reservoir will be only 18 to 20 ft deep through most of the area it will cover. This shallow depth permitted rebuilding of an unimproved east-west rural road (Atascocita Trail) in the inundated area on an earthfill. However, to provide a passage between the northern and southern halves of the reservoir, the fill was interrupted where it intersects the east and west forks of the San Jacinto River. These gaps are spanned by the two deck plate-girder bridges, with a 46-ft wide roadway designed for H-20 loading.

• **All girders are continuous** — The west-fork bridge, 1,324 ft long, required 1,100 tons of structural steel. This metal went chiefly into five sets of 3-span continuous girders. The center set is 520 ft long, with 160-200-160-ft spans; the others are 201 ft long, with 62-77-62-ft spans.

The east-fork bridge, 721 ft long, took 600 tons of structural steel. It contains similar 520-ft and 201-ft girders.

• **Design of record girders**—The girders are spaced about 9 ft apart under the 46-ft roadway. Framing into them are 21-in. wide-flange floorbeams at 20-ft intervals, in turn framed to 21-in. wide-flange stringers midway between the girders. Connections for floorbeams and stringers were riveted, instead of welded, to obtain better alignment on the heavy steel, avoid creation of undue stress and prevent burning of the lead-paint shop coats in places where it would be hard to replace. The deck is a 6½-in. concrete slab.

The 520-ft girders vary in depth. At the ends, they are 5½ ft; at the center of the 200-ft span, 7½ ft; and over the interior supports, 9 ft deep.

The girders have a ½-in. web throughout their length, stiffened both vertically and horizontally. At supports, vertical stiffeners are used on both sides of the web. Elsewhere, exterior girders have stiffeners only on the inside face, while interior girders have single-plate vertical stiffeners on alternate sides. These vertical stiffeners are 6x½-in. plates, which are welded to the web and bottom flange only.

Horizontal stiffeners, also 6x½-in. plates, are welded to the inside face of the web of exterior girders and to both sides of the web of interior girders. These stiffeners were employed near midspan of the 160 and 200-ft spans and at interior supports. They were placed at a distance of one-fifth the depth of the web from the compression flange.

Flanges of the 520-ft girders are 24 in. wide and vary in thickness from 1 to 2 in. They were attached to the web with continuous welds, which were applied simultaneously

(*Continued on page 35*)

Wire rope?
What's that got to do with us?

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A CF&I PRODUCT

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Construction moves right along when you use Bethlehem High-Strength Bolts to join structural members. For these bolts can be installed quickly, and by a two-man crew.

Bethlehem High-Strength Bolts are used in place of field-driven rivets. They are used with a hardened washer under the head, and another washer under the hexagonal nut. This permits the development of the high torque required, without scoring the connected material. While one man holds the bolt-head with a holding wrench, his partner drives the nut to refusal, using an impact wrench. The entire assembly can be completed in a matter of seconds.

Bethlehem High-Strength Bolts are made of carbon steel in a wide size range. They are heat-treated by quenching and tempering to meet the requirements of ASTM Specification A-325. Additional information about these bolts is available in a booklet we have just published, "High-Strength Bolting for Structural Joints." A copy will gladly be mailed on request.

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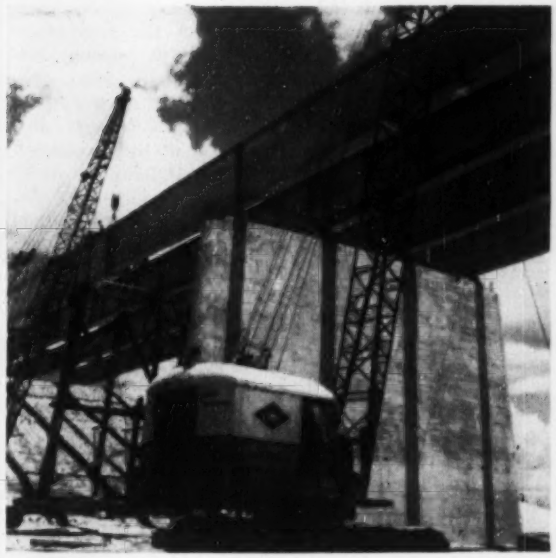


ERECTED in five sections with the aid of a timber falsework bent (left), the girders were spliced by welding (right).

from both sides of the web to prevent distortion. Field welding was carried out in the same manner. Cover plates 22 in. wide and 1 in. thick, were welded to the flanges over interior supports.

• **Erection procedure**—The girders were fabricated in five sections, and spliced by welding in the field. The end sections, 111 ft long, which were erected first, were supported on a permanent pier and a timber falsework bent. The intermediate section, 100 ft long, was placed next, with one end supported on the falsework and the other end cantilevered 51 ft past the interior pier. After the two sections were aligned and spliced, floorbeams, sway bracing and bottom laterals were installed in the 160-ft spans, and finally, the 98-ft gap was closed with the last section.

All welds—shop and field—were X-rayed. Some welds had to be replaced, though all welders hired had met a rigid test.

• **Other features**—In addition to the record-span welded girders, the substructures and railings of the bridges are of interest.

Although Lake Houston was designed primarily as a water supply project, it undoubtedly will develop into a major recreational area, popular for boating. Therefore, in the design of the bridges, it was necessary to provide not only for a runoff of 456,000 cfs but also to make provision under the main spans for mast clearance.

After conferences with many boat owners and dealers, a clearance of 18 ft was chosen. This and the level of the highest anticipated flood determined the elevation of the girders and the top of the approach fill.

Very limited quantities of impervious clay were available for construction of this fill. So when this type of material was encountered, it was stockpiled, then used to wrap the sand-and-sandy-clay fill in a 3-ft thick blanket of heavy impervious material.

• **Foundation design**—Because of the variable nature of soils encountered near streams in Texas tidewater areas, extensive subsurface explorations were necessary before the structures were designed. The Engineers Testing Laboratory, of Houston, was retained to perform this work, and Prof. Thomas W. Stallworth of the University of Mississippi was engaged as soil consultant. After the investigation, it was simple to determine that drilled shafts, belled at the bottom, offered the safest and most economical design, in view of the depth of stable foundation soil.

Excavations were opened for piers for their full length and to a depth well below the elevation of the streambed. Then, ten 36-in. dia shafts with 8-ft bell bottoms were drilled and filled with concrete. A reinforced concrete mat was cast on top of these shafts, and the piers were built on this mat.

The piers were made hollow to save concrete and reduce the load on the foundation. Their walls are 18 in. thick. The lower half of each pier is vented with 6-in. cast iron pipe.

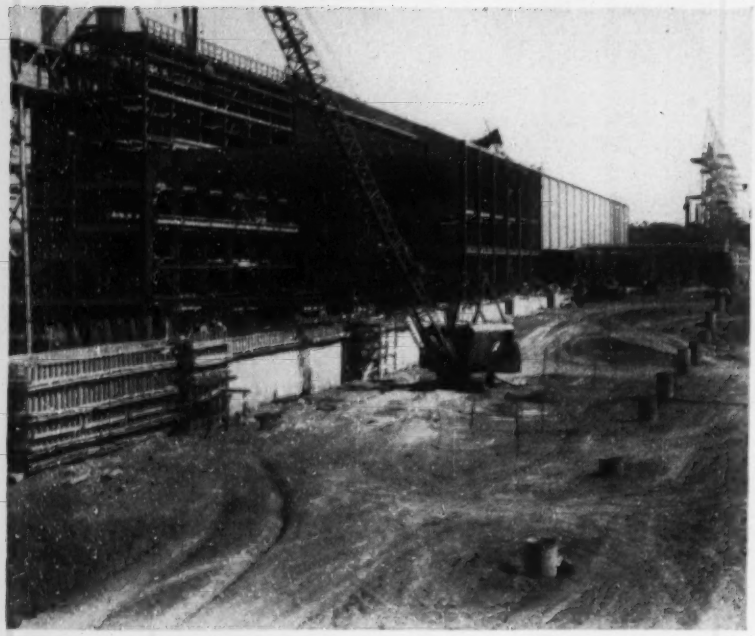
Bents are used to support the shorter approach, or anchor, spans. They consist of four concrete columns supported on four 36-in. dia drilled shafts having a minimum width of 8 ft at the bell bottom. These shafts were drilled through a steel caisson. To prevent caving of the sandy soil on removal of the caissons, concrete was placed as they were pulled.

Columns were cast in circular steel forms. The two center columns are vertical, while the two outer members are battered 18 deg. to resist the lateral thrust of wind and water.

• **Safety rail**—The handrail design, developed by Howe & Wise, has been in use for a number of years. The railing is an 8x12-in. rectangle. It is supported 12 in. above the curb on flush 8x15-in. posts. This design offers a maximum of safety, because when a vehicle strikes it, there are no projections on the rail or posts that will catch the vehicle and throw it into the path of another vehicle or cause it to go over the top of the rail. The vehicle slides along the smooth surface of the rail until it comes to a stop.

Heavily reinforced, the handrail is made with a 7-sack concrete. Its top is only 24 in. above the curb—another safety feature, because trucks with beds projecting past the wheel line will not be crowded into a tall rail before the wheels slide along the curb. The Texas State Highway Department has been using a modification of this design on many bridges.

Howe & Wise, consulting engineers, of Houston, designed the bridge and supervised construction. Farnsworth & Chambers, of Houston, is the general contractor. Structural steel was fabricated by the American Bridge Division of U. S. Steel Corp. and erected by Tom Harpster & Sons, of Houston. Engineers Testing Laboratory performed the material testing and subsurface explorations.



SHAWNEE STEAM PLANT WON'T FLOAT thanks to ring of relief wells, right.

Site dewatering wells stay put to control uplift

COLLECTION HEADER, offset from wells, has its invert some 45 ft below grade.

Ohio River floods won't bother TVA's big Shawnee Steam Plant. Sitting as it does on a left-bank flood plain, downstream from Paducah, Ky., the 10-unit station is surrounded by relief wells that helped dewater the site for construction and now can sap uplift strength of the highest of Ohio flood waters.

Shawnee is the only one of TVA's seven steam plants now under construction (ENR Feb. 25, p. 30) not to be founded on rock. While the other plants are securely anchored on sound and relatively impervious material, Shawnee sits on a permeable sand and gravel base under an impervious blanket of loess deposits. And it's at a spot where stability depends on keeping ground water down to El. 330.0 after the project is completed, even though flood stage in the nearby Ohio may go to El. 345.0.

Besides controlling water around the completed plant, it was necessary to control it at two additional levels. First, during early construction, it was necessary to hold the water below El. 285.0, in order to place the substructure foundation slab. Second, upon completion of the substructure, water was allowed to rise as construction permitted but not to exceed El. 310.0—that is, not prior to installation of all equipment. Thus the hydrostatic conditions that would exist upon completion of the plant were simulated as closely as possible during construction.

Foundation drainage must control future uplift. For solution of this problem, engineers of the Tennessee Valley Authority conferred with Army Engineer specialists in Omaha, Neb., where experience has been gained with drainage systems of the type proposed. Data from tests on under-seepage relief wells came also from the Corps of Engineers Waterways Experiment Station at Vicksburg, Miss. Lastly, Layne Central Co., in Memphis, Tenn., was contacted for its experience with a reverse hydraulic rotary method of drilling wells without casings through sandy soils.

• **Well system design**—There evolved a system of 84 wells around the perimeter and under the foundation mat of the building.

Thirty-eight wells are spaced around three sides of the original 4-unit powerhouse substructure. They are located to avoid interference with other features of permanent construction and spaced on about 40-ft centers, close enough to provide desired control of the ground water table. All connect to a common collection header with its centerline offset 5 ft from centerline of wells to allow pumping at any one well without interfering with flow in the header.

Four wells are under the center portion of the original powerhouse mat, connected to the collection header by an 18-in. pipe. There is manhole access to two of these wells.

Thirty-nine more wells are spaced around three sides of the substructure for six additional units now being added to the plant. And there are three additional wells under the central portion of the extended powerhouse.

To control effectively the water elevation around the exterior walls of the substructure, a triangular cross-section of sand and gravel backfill was placed over the foundation gravel to El. 330.0. This provided a drainage channel whereby the water around the structure could be lowered by the pumps controlling water in the underlying gravel.

The typical well is an 8-in. slotted wood-stave pipe surrounded by a graded gravel filter. The top 2 ft of the wood pipe, extending to collection header invert level, is unslotted and exposed inside a 24-in. concrete pipe riser, which is extended to finished grade as a means both of maintaining and pumping the well. Seven wells are designated as permanent pumping points; the rest have their risers capped with special cast-iron manhole frames and covers.

The connection from well to offset collection header is 18-in. concrete pipe encased in a concrete block. The collection header itself is 24-in. extra strength concrete pipe set on a concrete cradle throughout its length.

• **Construction**—Layne Central Co., contracted to supply drilling equipment, drillers and a superintendent. They moved onto the job when the site was excavated to subgrade and used their reverse hydraulic rotary drilling method:

A short length of casing is sunk by hand excavation at the desired well location, and a well-drilling derrick is set over the hole. A sump is dug adjacent to the derrick platform, and a channel is provided to direct overflow back into the well by gravity flow. The short length of casing protects the exposed perimeter of the well from erosion.

The well is drilled with a special 24-in. rotary bit fastened to a drill stem made of 8-in. pipe. Rotation of the stem and the bit is actuated by a chain drive from the hoisting engine to a turntable. The turntable transmits its rotation to a special section of drill stem, or "kelly." This special section is a 4-in. flanged pipe with two continuous lugs, 180 degrees apart, which engage in slots in the turntable. This device permits rotation of the drill-stem and bit, while allowing it to be raised or lowered by a line from the hoist. As a well is sunk, additional lengths of drill stem are inserted at the flanged connection on the lower end of the kelly.

The drill stem is connected to a sand pump by a special swivel connection at the top of the kelly. This connection allows the drill stem and the bit to rotate while cuttings from the bit are pumped up through the stem and discharged into the sump. A small vacuum pump which exhausts air in the suction line is used to prime the sand pump.

To begin the drilling operation, the sump is filled with water from some external source, and a drilling mud is made by adding ball clay. Overflow from the sump is channeled into the hand-excavated casing; the drill bit is lowered into the hole; and rotation is begun. The sand pump is primed and begins discharging into the sump, where cuttings are settled out and overflow is let run back into the well. Additional water and clay are added as needed, and the drilling process is continued until the well is sunk to desired depth.

Walls of the well are kept from caving in by maintaining the fluid within the well about 6 ft higher than the surrounding ground water level. This excess head causes a portion of the fluid to flow out of the well into surrounding ground water and forms a coating of clay on walls of the well.

The coating, coupled with excess water pressure in the wall, tends to prevent the wells from caving in.

TVA engineers point out that success of drilling by this method is dependent on knowledge and experience of the driller. Amount of drilling fluid and excess of water in the well are variables that must be made to fit field conditions.

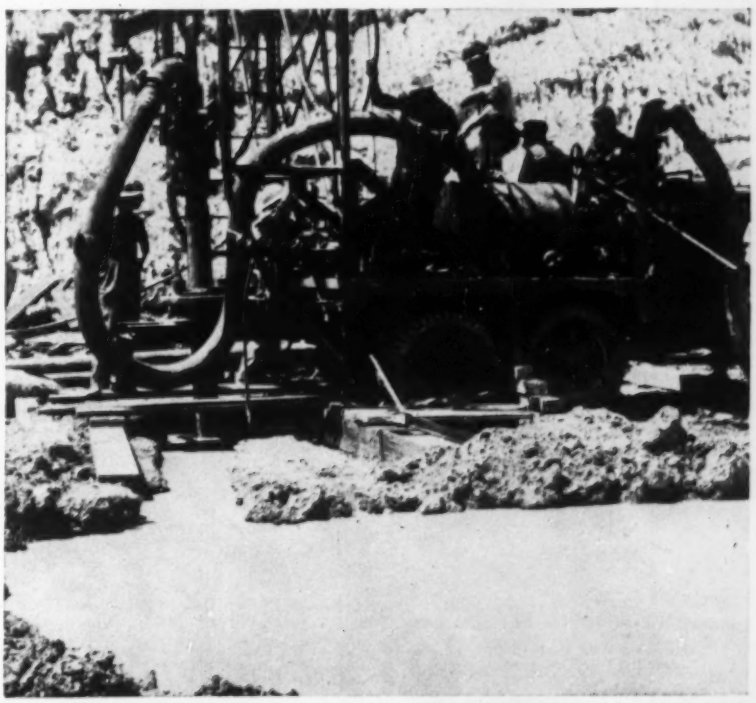
The 8-in. redwood pipe screen was assembled on the ground and spliced to correct length by mortise and tenon joints reinforced by three metal strips. Wood spacer-blocks were fastened at each splice to center the screen in the 24-in. drilled hole; a redwood plug was placed in the lower end of the screen. To ease handling and prevent damage to the unlined well in the process of placing the long lengths of screen, a 6-in. pipe was inserted inside the screen to act as a temporary stiffener. Filter material was placed around the screen by tremie.

Early pump tests made to determine suitability of the filter showed its material too coarse; sand was drawn into the well through the entire test. Filter specifications were revised, and a proper gradation was found and used on all the wells.

At ground level, a 2-ft collar of

(*Continued on page 39*)

DRY WORK on substructure was made possible by wells, here being backfilled.



WET WORK—The special drilling technique used produced unlined 24-in. dia holes in the gravelly soil at the site. It's a reverse hydraulic rotary method.

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23-in. dia corrugated steel pipe was centered on the well to contain the exposed filter material and prevent intrusion of surrounding sandy soil.

When all wells were completed, they were surged and tested. To surge the wells, a derrick was set over the well and a plunger was inserted in the pipe screen. Water from an external source was poured into the well, and the plunger was churned up and down by a line from the hoist. This action forced water from the well as the plunger was lowered and rapidly drew it in as the plunger was raised. The agitation drew free sand from the filter material into the well where it was removed by an air lift.

Pump tests were performed using a 5-in. deep-well pump. Tests gave a minimum yield of 118 gpm with an 18-ft head and a maximum yield of 320 gpm with a 3-ft head.

Whereas wellpoints were used during construction of substructure for the first four units of this Shawnee plant, the relief well system was used to dewater the site for construction of the latter portion, still under construction. In this area, wells were sunk into clay underlying the water-bearing strata; the purpose of extending below the gravel layer was to provide a sump in each well to facilitate pumping for dewatering the foundation site.

Dewatering pumps had their discharges connected to a temporary 14-in. steel pipe set on the opposite side of the wells from the permanent collection header. When the powerhouse foundation for units 5 to 10 was constructed and operations were in progress, the dewatering pumps were removed as ground water conditions permitted, and the permanent collection header was installed.

Permanent pumps installed for uplift control are propeller type with electric-motor drive. They have capacities of 2,500 gpm against 26-ft total dynamic head. Operation is controlled by a float switch installed in one of the wells. A water-level gage installed in another well activates a remote recording instrument located in the shift engineer's office.

All seven permanent pumps are installed with turbine bowls approximately at El. 303; motors are above ground at El. 344.5. The collection header invert is at El. 295 to 297 for units 1 to 4; at El. 320 for units 5 to 10. Ground elevation is about 344.5.

All engineering and construction work at Shawnee is under the direction of C. E. Blee, TVA's chief engineer; R. A. Monroe, chief design engineer; and G. K. Leonard, chief construction engineer. F. L. Weiss is project manager; John Boyd, construction engineer; and Clyde Caylor, construction superintendent.

Bidding for engineering services

Modification of the present stand of the engineering profession against competitive bidding for engineering engagements was proposed by the editors of Engineering News-Record in the issue of Nov. 19, 1953, p. 167. An editorial statement in that issue proposed that the profession "sanction the submission of competitive proposals for engineering services under conditions that will minimize the possibility of an award being made on the basis of price alone."

Comment on that editorial was published in the issues of Jan. 28, p.42, and Feb. 4, p.32, and an editorial discussion of the comment was published in the issue of Feb. 11, p.80. Further comment on the general subject follows:

Starting from a false premise

SIR: To argue that because legal statutes conflict with ethical standards established by a process of evolution over many years by the engineering profession and that they, therefore, should be abolished, is false, dangerous, and liable to have far reaching repercussions resulting in a lowering of the quality of engineering structures as a whole.

One might as well argue that because a small percentage of people are dishonest, it is, therefore, a waste of time to uphold moral standards of honesty. Why not tell everyone that he can be just as dishonest as the small minority?

Another example would be to say that because some specifications are not rigidly adhered to, why not abolish specifications as a whole?

Assuming that the low bidder is not accepted necessarily and that the work will be awarded on the basis of past experience and standing of the party in question, then the proper approach would be to call in for an interview firms qualified to do the required work, establish a fee recognized as fair and standard for that type of work, and then make the choice purely on the ground of merit. This system is being followed in Canada in making the awards for a number of government contracts for professional services and there is no bidding on a fee basis.

EDGAR A. CROSS
Consulting Engineer
Toronto, Ont.

Competition is needed

SIR: Regarding the current controversy in your pages on the ethics of bidding for engineering services; congratulations. I am, I presume, one of many young engineers who have left the "profession" because of its lack of opportunities. This lack I consider to be due largely to the apparently successful attempt of established concerns to lead the public to think there is something secret in their methods and unknown to anyone else. I dispute the statement that 80% of fees are paid in salaries, as recently asserted in your columns. Many present day engineering firms are trading on a reputation made years ago by men long since dead; under competitive conditions, they cannot exist.

I particularly dispute the assertion, also made, that salaries will be reduced by competitive bidding. So long as no price tag is placed on efficiency, salaries will be low because of lack of competition for better men. When price becomes more important, men are paid more on a basis of work produced; and the result is an overall reduction of work force combined with greater output.

I dispute the popular assertion that the "name" concerns necessarily are better engineers; their work is performed by the same type of people, and under present conditions, the ability of the persons at the top cannot be spread very far. Once having made a name, the elders of the firm will trade on it as long as possible; the details of design—and costs—are allowed to slide, and the members join a society dedicated to maintaining their dignity and the economic status quo.

The engineering profession—I apply the word only to the 5% or so of engineers who are engaged in positions which require the use of original judgment—like every other business, can show many reasons why competition is bad. And there is competition only in the bidding. The concept that firms compete in technical judgment is false. There is no standard of professional judgment.

The practice of competitive bidding does not change one iota the problem of determining technical competence. It does, however, indicate the extent of favoritism in establishing fees; the amount by which fees have been exaggerated by the societies; and the relative efficiency of the firm.

Moreover, competitive bidding will make the establishment of technical qualifications and standards imperative. It will open the way for competent employes to set themselves up

(Continued on page 40)

. . . Bidding for engineering services

in business in competition with their former employers, thus challenging the competence of the latter.

And perhaps, the salary of the engineer in charge of design eventually may approach that of the one in charge of selling design services!

My interest is strictly selfish. The real criterion of engineering ability is the actual cost of the finished product for results obtained. That can be determined only by men skilled in determining costs, not in design. In that category men are much scarcer than in design.

KING ROYER
Project Manager
Ajax Construction Co.
Arlington, Va.

A businessman's views

SIR: Although I am not an engineer, nor have I been directly connected with an engineering firm, I was for the last 47 years connected with Pacific Clay Products whose principal business has been manufacturing and sale of vitrified clay sewer pipe, which has kept me in close contact with the engineering profession. I am now retired.

While I am a strong believer in high ethical standards and believe that industry as a whole has gone a long way in the last decade by making use of its codes of ethics and endeavoring to live up to them, I believe that the highly qualified engineer is making a big mistake when he tries to establish minimum costs for engineering services, or objects to bidding competitively for engineering projects. Personally, I cannot see any difference between his position and that of the highly qualified contractor who has to execute the engineer's plans and specifications.

I think you will agree that engineers as well as contractors look at projects from different angles. This permits them to process a given project in a first class and workmanlike manner for less money than their competitor. American business has grown and become great by virtue of our free and competitive standards.

I believe that the engineering profession would be making a grievous mistake to try to put a price tag on the different engineering operations, as one commentator suggests, which eventually would lead to the amount of work each employee could do.

I believe that if a political subdivision has an engineering problem, it should set forth clear-cut agenda of the work to be done and then award it to the lowest responsible bidder who can furnish the necessary bond so that it can protect its taxpayers.

A. T. WINTERSGILL
Los Angeles, Calif.

An outsider on bidding

SIR: I enjoy your discussions of bidding for engineering services even though I am just one of those who upholds his end by moving dirt, mud and rocks.

I have operated machines in various jobs where good common sense says that perhaps, if the consulting engineering had been awarded on a competitive bid basis, with good men on the job, there would be less reason for inferior or more costly end results.

A constant challenge in this respect, as it is in the construction contractors' field, is just as fitting in my humble opinion.

I'll agree that professional men have a lot at stake in years of schooling, etc., but if they can't put their own house in order to the extent that competitive bidding is permitted in their own ranks as well as in the ranks of their fellows (contractors), then there is something wrong.

I don't think the engineering profession has reached the heights it has grown to for fear of competition.

I hope you will find room for this comment from one who enjoys his work from a standpoint other than just the money angle, which he uses to barter for the necessities to meet his moral obligations to his family.

DANIEL B. PEFFLEY
Elverson, Pa.

A possible solution

SIR: Many suggestions have been offered for correcting the practice of competitive bidding, but unfortunately they are of an indirect nature and their success, if any, will involve a long period of education.

It was during my service as a member and chairman of the Committee on Professional Conduct of the ASCE that Article 4 in its present form was inserted in the code of ethics. I am, therefore, quite concerned about the growing tendency toward violating this provision.

I wonder whether you have made a survey of the state statutes throughout the country to determine whether there is any appreciable difference in their wording, which might account for the vast variation in methods by which some states insist on competitive bidding for engineering services and others comply completely with the code of ethics.

You probably will find that, with very few exceptions, the laws are practically alike and the administration of these laws varies with the construction placed upon them. A thorough review of existing statutes, together with the interpretations placed upon them by the various states' attorneys, might lead to uniformity in construction by eliminating engineering services from their restrictions without any change in the statute, unless professional services are actually mentioned therein.

An approach, such as is suggested herein, may lead to a direct solution of this ever-recurring difficulty.

MORRIS GOODKIND
Director & Chief Bridge Engineer
State Highway Department
Trenton, N. J.

The fee is not paramount

SIR: Your editorial "Bidding for Engineering Services", and subsequent readers' comments have prompted me to give my views on the subject because perhaps they would differ in the line of thought from the "experienced".

After working for some time for various architectural-engineering firms, consulting engineers, contractors, etc., and deciding to enter private practice, I immediately contacted several gracious practicing consulting engineers to get ideas on what I could "legitimately" charge prospective clients and still remain in the good graces of my "competitors". I received so many well meaning, but varied answers, that I fear I shall either be adjudged exorbitant in my fees or "unethically" cutting throats in my future dealings with clients.

In my many talks with men engaged in the engineering profession or related work, I have come to the conclusion that the word "ethics" is very much abused. It is discouraging to say the least that the problem hasn't been solved long ago by the many intelligent men whom it so vitally concerns.

Perhaps the fly in the ointment has been the fact that the many practicing engineers have been prone to keep their professional status on too high a level when it shows and a low level when it doesn't. I think the real solution will result when we engineers acquire the ability of convincing our clients that the matter of fees is not the paramount issue involved, but that pride in the finished product is as important to us as in the case of any other artisan who works with tools and mind.

FLOYD S. WRIGHT
Consulting Engineer
Tacoma, Wash.

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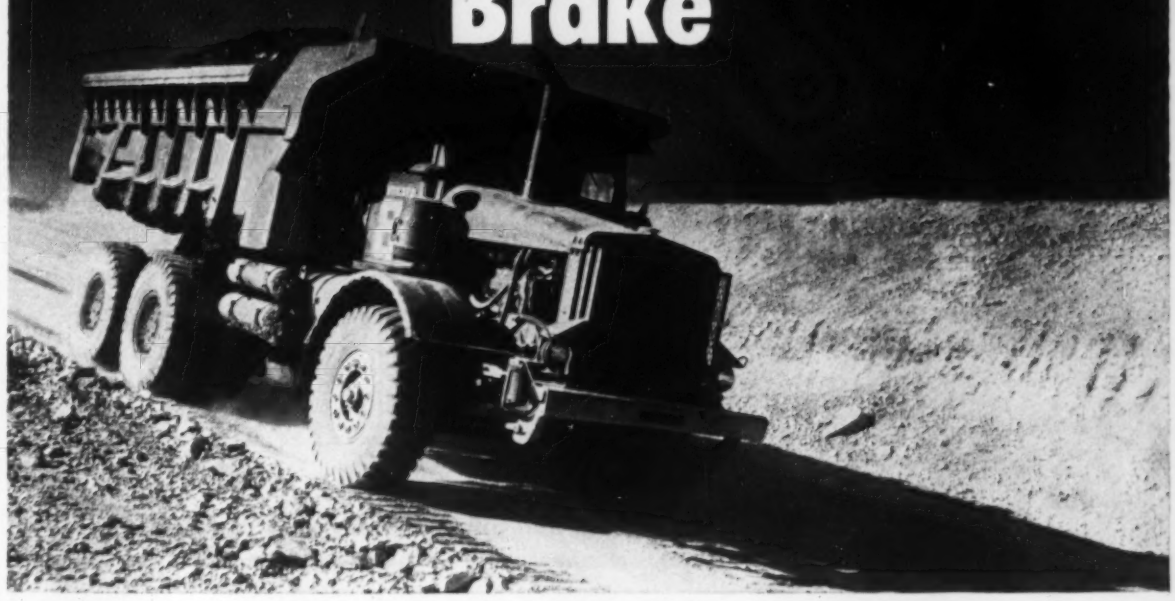

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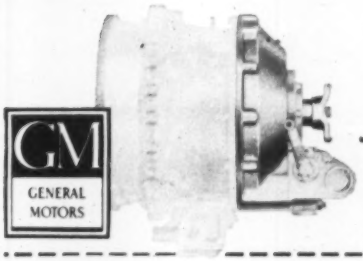

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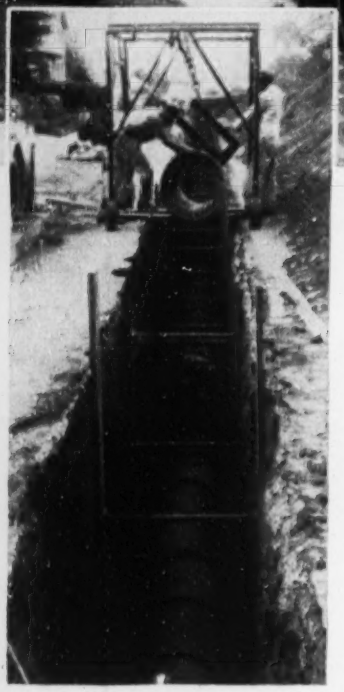

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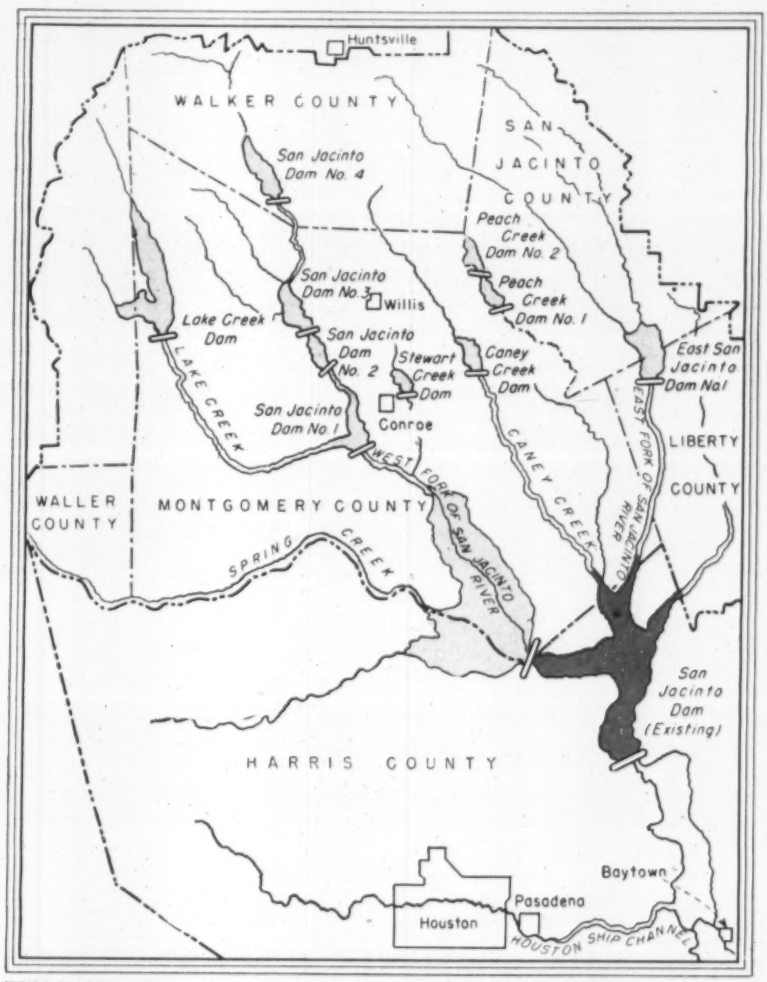

TEN DAMS will provide Houston area with water needed for industry.

More water for fast growing Houston?

Conservation-reclamation are primary aims of new plan, but water for industry will be source of financing

One of the most ambitious water supply, reclamation and conservation programs in the South has started boosters of the Houston area of Texas looking forward to even greater industrial development.

At a recent meeting in the Texas city, directors of the San Jacinto River Authority presented to officials of Houston and Baytown its master plan for supplying the area with an additional minimum water yield of 250 mgd.

• **The plan**—S. W. Freese, consulting engineer to the authority, explained the engineering features of the plan. He said that the 456-billion gallon average annual runoff of the watershed is about one and a quarter billion gallons per day and that it is practicable to conserve at least half of the water for beneficial use.

As presented, the plan includes development of ten dams at an estimated cost of $10 million. The proposed cost of water from the dams and reservoirs in the watershed would be about one cent per thousand gallons.

Mayor Roy Hofheinz of Houston enthusiastically supported the proposal, commenting that by 1960 demand of the Houston industrial area will have exceeded even the supply of the city reservoir behind the newly completed San Jacinto Dam (see map).

• **More than a supply program**—The authority's plan is one that will lead to full development of the watershed. Its primary objective is "the conservation, reclamation and use of the natural resources of the watershed of the San Jacinto and its tributaries for all purposes contemplated by the state government when it created the authority."

• **Flood control**—The watershed of the San Jacinto and the lower valley of the river have been ravaged by recurrent floods that caused not only great loss to life and property, but carried away millions of tons of prime topsoil, thus depleting the fertility of valley lands.

Navigation also has suffered from large deposits of silt dumped into the Houston Ship Channel. Emphasis is placed upon the port's rank as second in the nation in volume of tonnage handled, thus stressing the necessity for a clear and navigable channel.

Development dams will provide that open channel.

• **Water supply**—Only one-seventh of the watershed runoff was used in 1950 for domestic, agricultural and industrial purposes in the area, yet with extreme fluctuations of the runoff rate, hardship was experienced when river flow dropped to below 20 mgd. Substantial storage that would be provided by the development is therefore essential for a firm and secure supply.

Authority engineers estimate that, in addition to the anticipated requirements of Houston, the San Jacinto River complete with proposed improvements, is capable of supplying an average of 400 mgd to other municipalities, agriculture and industry.

They estimate a 20-mgd industrial yield from the westernmost Lake Creek Dam alone.

• **Water quality**—The water of the San Jacinto is clean enough for use in many industries without treatment and can be treated at moderate cost for domestic use and for industries requiring finer type of water.

Analyses show the water to have average hardness of 54 ppm, one-third the hardness, for example, of the Brazos River. Chlorides average 58 ppm, and sulphates average only 3 ppm (U. S. Public Health Service limits for both chlorides and sulphates are 250 ppm).

(*Continued on page 44*)

1. STRENGTHENS THE BOND
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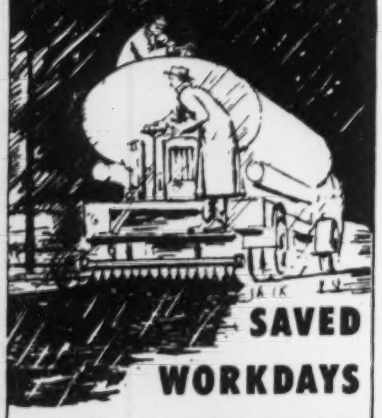

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Schedule of dams under proposed plan

Name of dam	Capacity (acre-ft)	Elevation at Crest	Estimated Cost
E. San Jacinto No. 1	107,000	307 ft	$2.2 million
San Jacinto No. 3	150,000	206 ft	$3.7 million
Lake Creek No. 1	105,000	175 ft	$2.6 million
San Jacinto No. 1	33,525	155 ft	$925,000
San Jacinto No. 4	25,210	222 ft	$700,000
Caney Creek	6,930	....	$400,000
San Jacinto No. 2	5,830	170 ft	$375,000
Peach Creek No. 1	5,380	....	$150,000
Peach Creek No. 2	2,750	12.2 ft	$200,000
Stewart Creek No. 1	2,400	13.3 ft	$175,000

• **Financing through water supply**—Under the plan, income from water sold and distributed shall be applied as follows:
(1) maintaining, operating, repairing, extending and improving facilities constructed or acquired for the storage, transportation, treatment and distribution of the waters of the San Jacinto and tributaries;
(2) payment of principal and interest on the bonds and other evidences of indebtedness . . . provided for in the resolutions that authorize the issuance of each series of bonds;
(3) support of a proper program of soil conservation and reclamation . . . according to programs initiated each year and paid for out of net revenues of the authority; and
(4) to construct and acquire other improvements and facilities that will be beneficial to the development of conservation measures provided for in the general plan.

• **Conservation**—Since 1946, the authority has carried on an extensive soil conservation program with its own equipment and operators (Planning and engineering was supplied by the San Jacinto Soil Conservation District with aid from the U.S. Department of Agriculture and the Corps of Engineers), including the construction of over 150 miles of field terraces, more than 75 miles of water diversions, and several miles of drainage ditches.

Areas where improvements have been built have shown a reduction in soil erosion and a marked slackening of runoff rate.

• **Recreation**—The authority's primary obligation, under the plan, is to protect water supplies against pollution and unsanitary conditions.

However, it intends to continue making available to the general public all its lakes and other improvements for fishing, boating, etc.

In the plan, two dams have been replaced by one that will form the Spring Creek Reservoir (the largest proposed storage body shown on map). This will be built as a supplement to the water supply for the Houston-Baytown industrial areas.

Lincoln Tunnel dispute ends as 500 go back to digging

With the hasty amendment of legislation by two states and the quick resolution of a dispute between the Port of New York Authority and the municipality of Weehawken, N. J., over the prevailing price of tennis courts (ENR Mar. 25, p. 51), 500 men resumed construction of the third tube of the Lincoln Tunnel last week.

Weehawken claims that it has accepted—in lieu of cash payment—an estimated $500,000 to $600,000 worth of property and municipal improvements offered by the PNYA in exchange for tennis courts that lie in the path of the tube.

Thus ends the duel between the PNYA and Weehawken, site of a more famous duel—Alexander Hamilton-Aaron Burr in 1804.

City tries wage incentives

The city water meter repair shop of Philadelphia, Pa., has found that production has increased 50% since the experimental adoption of a wage-incentive payment plan for its employes.

The plan's purpose is to ensure "a fair day's work for a fair day's pay." The amount of work regarded as "fair" is the production rate that a worker is expected to maintain for his basic pay. Anything above that rate makes him eligible for incentive wages.

Two basic rules are set up:
• First, there must be time studies conducted by trained persons to meas-

(*Continued on page 46*)

Industry standards guarantee a truck mixer with this rating plate to mix 4½ cubic yards.

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AND CERTIFIED BY THE TRUCK MIXER MANUFACTURERS BUREAU TO COMPLY WITH ITS STANDARDS FOR TRUCK MIXERS AND AGITATORS AS APPROVED BY THE N.R.M.C.A.
6 1/4 CUBIC YARD AGITATOR
UNLESS RATED LOWER ON THE MANUFACTURER'S DATA PLATE
N.R.M.C.A. Register No. E-

New rating plates, on old truck mixers, guarantee ½ cu. yd. more mixing capacity

Revised standards of the Truck Mixer Manufacturers Bureau now provide that standard truck mixers of 2½ cubic yards or larger size shall be guaranteed by the manufacturer to mix an additional one-half cubic yard over their rated capacity.

This increase in capacity, approved with correlated specifications in the new standards of the National Ready Mixed Concrete Association, is immediately applicable to truck mixers in the field larger than 2½ cubic yards which are now eligible to carry rating plates. The guarantee is conditional, however, on the attachment of the new rating plates.

To obtain the new rating plates, owners need only return their original plates to the Bureau with $3 fee for each re-rating plate to be issued.

Users of ready-mixed concrete, who benefit by increased deliveries from re-rated truck mixers, may bring this to the attention of any concrete supplier who is now ineligible to make this service improvement because of out-of-date rating plates.

We will gladly mail a composite copy of the new ASTM, NRMCA and Bureau standards to all architects and engineers who wish to maintain these quality standards by writing them into their own ready mixed concrete specifications. Address requests to the TRUCK MIXER MANUFACTURERS BUREAU, 1325 E. Street, N. W., Washington 4, D. C.

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ure the production that might be expected in an hour and set the standards.

• Second, once set, the standards cannot be changed except by the approval of the director of the personnel department and of the Civil Service Commission.

The plan is limited, of course, to departments where the work can be measured and for which standards can be set for hourly output of the employe.

Each to his own taste

Milwaukee has tried its "amble-scramble" system of downtown traffic movement at four intersections for six months, and has voted to abandon it.

Under the city's program, 90-second traffic and 25-second pedestrian cycles were used, but despite changing of combinations of time intervals, the plan had many more critics than advocates.

In Milwaukee, city traffic and safety experts have been instructed to recommend some other way for easing conflict between pedestrians and vehicles.

• **Joins the proponents**—Meanwhile, Long Beach, Calif., has decided to keep its own scramble system after a three-month trial at four intersections.

Police Chief William Dovey says he hopes to extend the scramble to six other downtown intersections.

Transit financing altered

Passage of a bill sponsored by Gov. C. A. Herter of Massachusetts promises a solution of Boston's Metropolitan Transit Authority financial problem over an annual deficit of $8 million to $9 million.

The new law transfers the MTA's fixed charges for debt retirement and subway rentals from the transit system to the 14 cities that it serves in the Boston area.

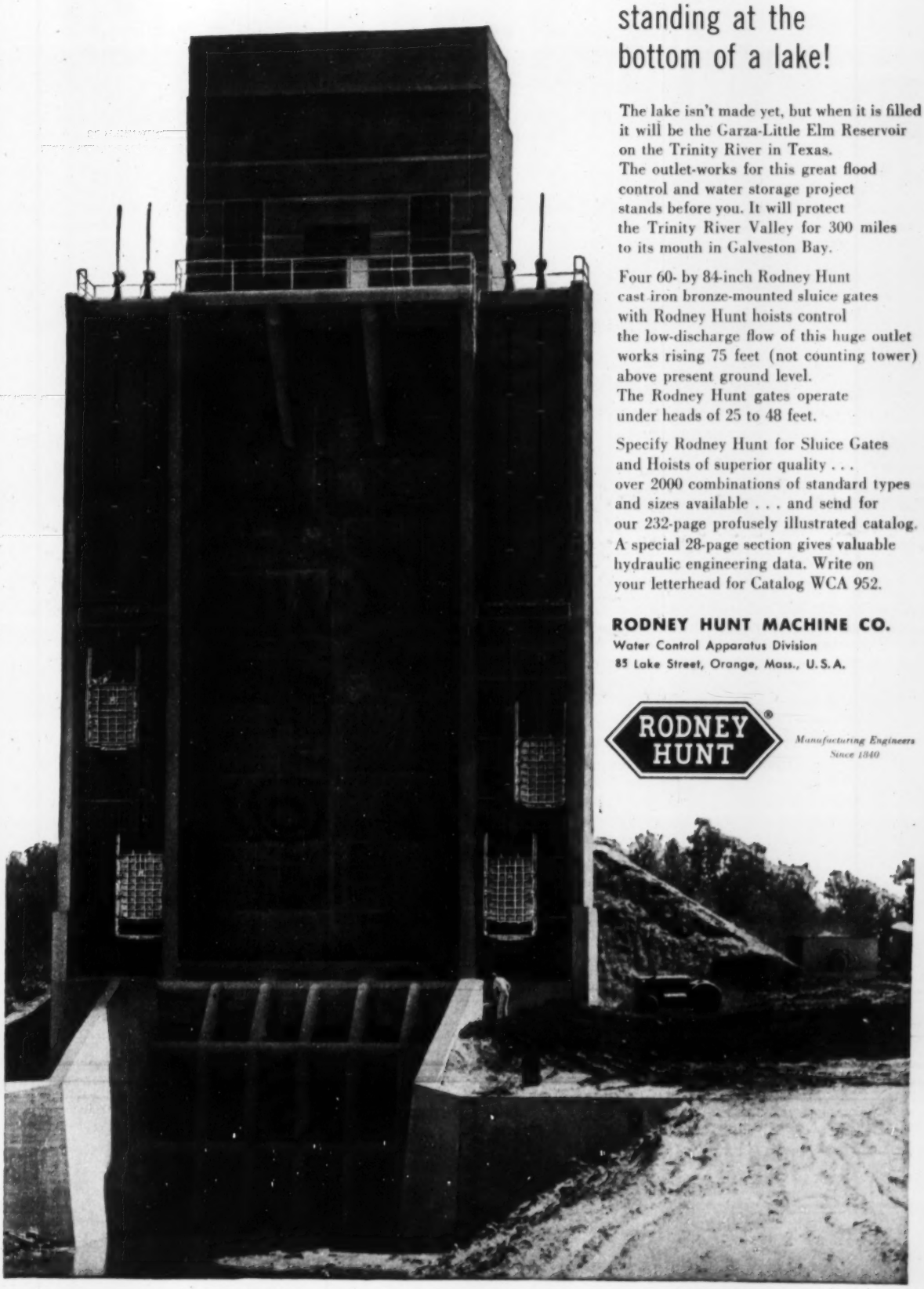
The charges amount to about $5.7 million annually.

The authority recently attempted to raise the existing 10-cent fares to from 14 cents to 35 cents on a zone basis, but was forced to abandon the move under the impact of public opposition.

Instead, the trustees of the MTA have petitioned the state Department of Public Utilities to approve a new schedule of token fares at a straight 16⅔ cents (three for 50 cents), or 20 cents if bought singly.

Bridge is designed with three decking alternates

Bids for construction of a proposed 5,897-ft bridge (central background) across the Pend Oreille River in Idaho will be opened April 6. Alternate bids for three types of deck construction will be considered. (1) Each span to be precast as a unit—(2) Six inverted precast U-sections, bolted and keyed—and (3) Precast stringers with concrete floor, end beams and curbs cast in place. Substructure for all three will consist of 154 spans of 35 ft, 25 tower spans of 17 ft and one 82-ft span.



You are standing at the bottom of a lake!

The lake isn't made yet, but when it is filled it will be the Garza-Little Elm Reservoir on the Trinity River in Texas.
The outlet-works for this great flood control and water storage project stands before you. It will protect the Trinity River Valley for 300 miles to its mouth in Galveston Bay.

Four 60- by 84-inch Rodney Hunt cast iron bronze-mounted sluice gates with Rodney Hunt hoists control the low-discharge flow of this huge outlet works rising 75 feet (not counting tower) above present ground level.
The Rodney Hunt gates operate under heads of 25 to 48 feet.

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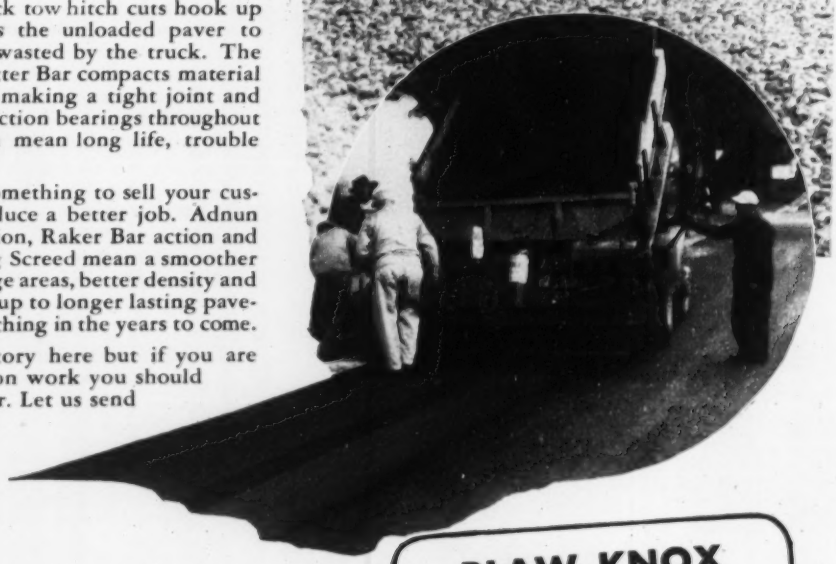
We can't tell the whole story here but if you are bidding on non-specification work you should find out about the Adnun Jr. Let us send you the latest bulletin.



ADNUN JR MODEL 8

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BLAW-KNOX

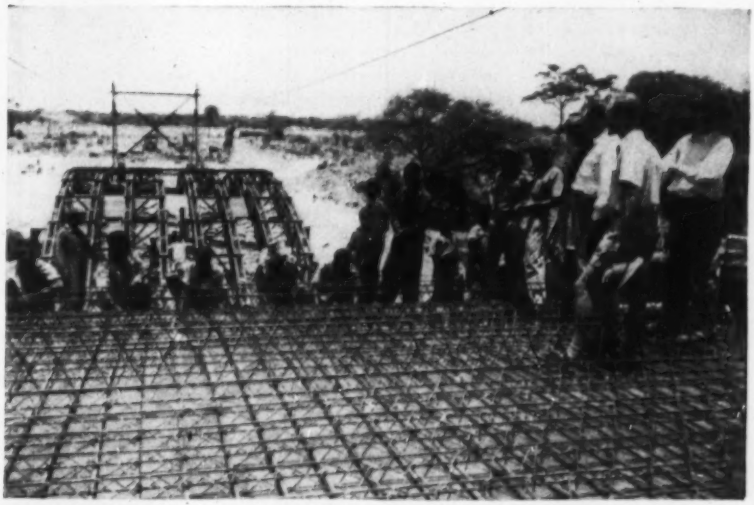
THREE-PINNED STEEL ARCHES are used to support forms for three-span reinforced concrete arch bridge over the Umfuli River in Southern Rhodesia.

Concrete arches get steel-arch support

Near Hartley, Southern Rhodesia, a new bridge was built with three-hinged steel arches spanning 100 ft as centering to support forms for three reinforced concrete spans. The bridge carries a highway linking Salisbury, the capital, with Bulawayo.

Steel centering was erected by a cableway. Thrust of the centering arches at the crown pin was carried through jacks at the inner ends of the half-arch trusses so that after the concrete vault was in place, pressure on the jacks could be relieved and the trusses lowered to the riverbed a half span at a time.

Spaced at 3-ft 4½-in. centers, the three-hinged steel arches span 100 ft and rise 17 ft 6 in. Sandbag loads were placed on planks—lying across the bottom chords of the steel trusses near the crown—to dampen vibration in the trusses when placing concrete by cableway in the forms. Reinforcing in the concrete arches included welded joist-like reinforcing elements placed transversely to the arch and welded to the longitudinal reinforcing. The Southern Rhodesia Roads Department designed and built the bridge.



ARCH RIBS are spaced at 3-ft 4½-in. and were placed by cableway, which was also used to place concrete in the arch forms.

International briefs . . .

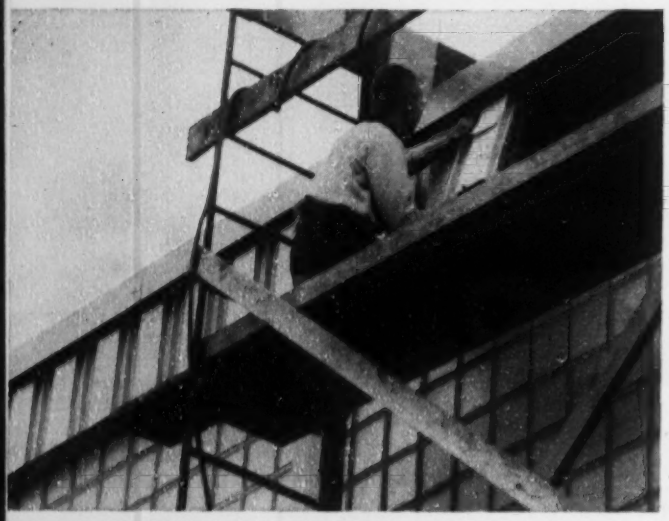
• **Gas pipeline for Pakistan**—Surveys in Pakistan are paving the way for construction of a $25-million, 350-mi pipeline to carry a new find of natural gas from the desert at Sui Dera Bugti to Karachi. The 16-in. line should be finished next spring—and by 1956 should supply about 37 million cu ft a day. (The reserve reportedly will provide 100 million cu ft a day for 60 years). First supplies are slated for new cement, pottery and textile industries in Karachi.

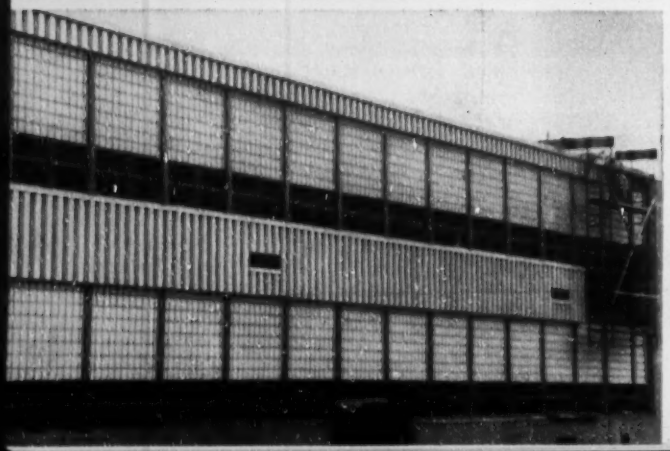
• **Dutch canal planned**—Belgian and Dutch negotiators have agreed on plans to construct a canal through Holland to link the Rhine and Scheldt rivers. The reason Belgium is interested—and reportedly ready to shoulder most of the costs of the 8-year project—is that it would give Antwerp a water route to the Rhine. The waterway would be dug across the narrow neck of South Beveland, then cross country from the banks of the eastern Scheldt through the village of Moerdijk (on the Holland Deep).

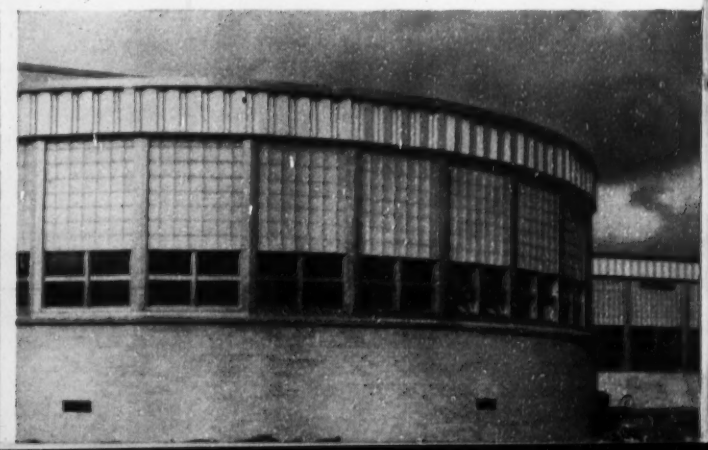
• **Tunnel teamwork?**—Several U. S. firms are said to be interested in constructing Brazil's projected Rio Niteroi tunnel across Guanabara Bay. According to a representative of the tunnel committee, these firms would welcome a joint operation with Brazilian companies. The $70-$80 million toll project would take five years to complete—unless favorable drilling conditions are found.

• **Philippine power plan**—The Philippine National Power Corp. has allocated $61.3 million for a two-year national hydro-electric power development program. This year $32.4 million has been earmarked for construction of seven small plants and two major ones—top priority projects scattered throughout the country. During 1955, $28.9 million will be spent to finance eight additional power installations.

New EDISON JUNIOR HIGH SCHOOL* takes full advantage of the beauty and utility







Here is a fine, spacious, new junior high school building that sets a precedent in design and construction. For the architect has made extensive use of one of today's most beautiful and most functional building materials—Stainless Steel.

On the exterior of Edison Junior High School, insulated panels of Stainless Steel form the spandrels and the head panels. The spandrels are of 20 gage Stainless Steel, one foot wide and four feet high with six-inch face square corrugation. The head panels are one foot high. Panels are insulated with one and one-half inches of Fiberglas and attached to the structural framework with clips.

The combination of Stainless with masonry and glass block makes an extremely attractive building. But the benefit of Stainless panel construction doesn't stop there. Construction with the panels was fast and went forward in all types of weather. More complete utilization of floor space was possible through this curtain wall type construction. Maintenance on the Stainless Steel will be negligible and life will be long.

These panels are extremely efficient from a heating standpoint. They have a low rate of thermal transmission (or "U" factor).

Stainless Steel also was used in this school for sills, mullions, windows, door canopies and trim, blackboard and tackboard frames, doors and door frames, column covers and other items of interior trim.

If you have a new school in the planning stage, now is the time to think about Stainless Steel and its many benefits. And think in terms of USS Stainless Steel. For more information on Stainless Steel panel construction, mail the coupon at right. If you like, we will be pleased to have one of our representatives call.

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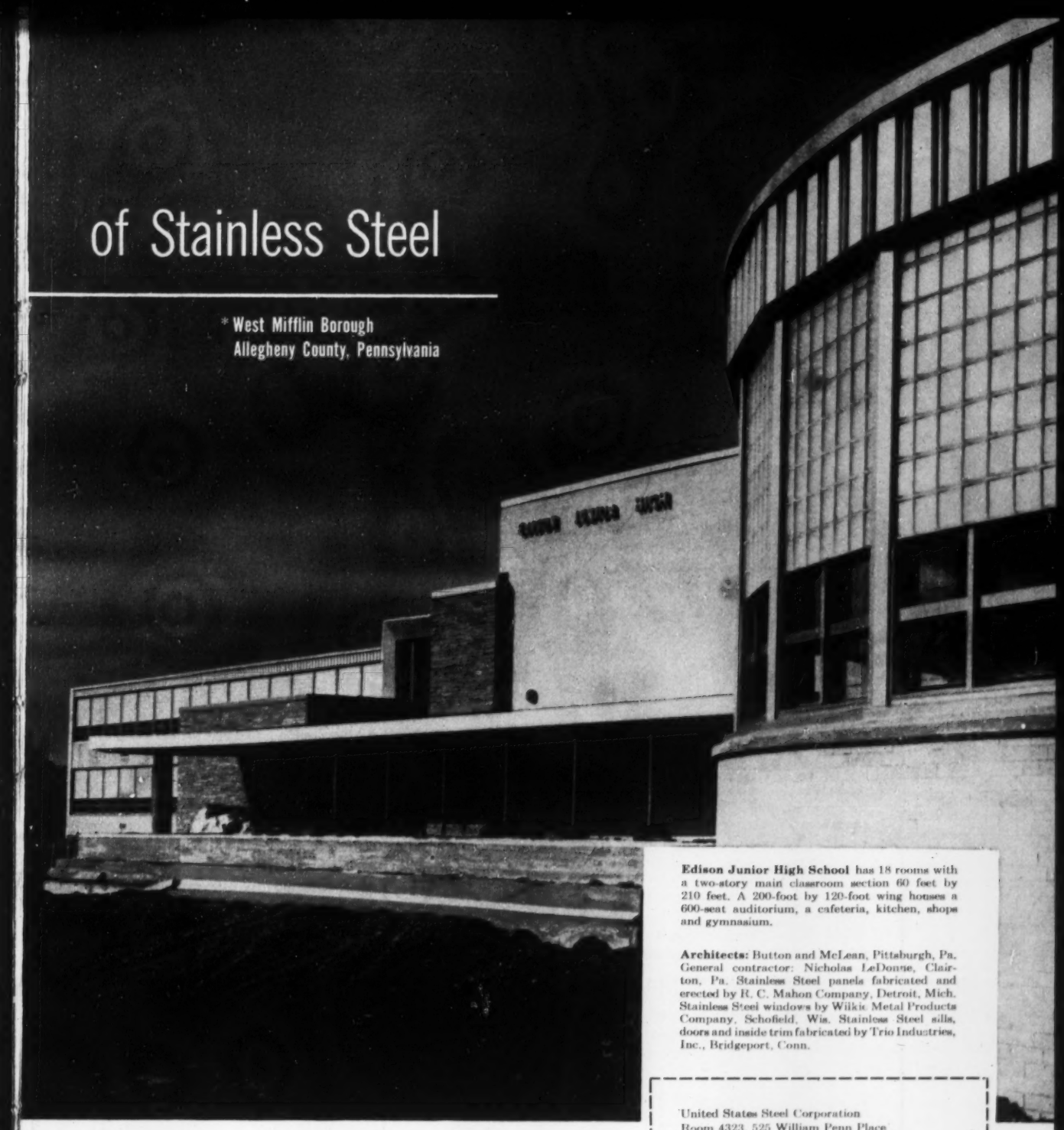

Edison Junior High School has 18 rooms with a two-story main classroom section 60 feet by 210 feet. A 200-foot by 120-foot wing houses a 600-seat auditorium, a cafeteria, kitchen, shops and gymnasium.

Architects: Button and McLean, Pittsburgh, Pa. General contractor: Nicholas LeDonne, Clairton, Pa. Stainless Steel panels fabricated and erected by R. C. Mahon Company, Detroit, Mich. Stainless Steel windows by Wilkie Metal Products Company, Schofield, Wis. Stainless Steel sills, doors and inside trim fabricated by Trio Industries, Inc., Bridgeport, Conn.

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☐ Please arrange to have fabricators of Stainless Steel wall panels send me literature on their particular type of construction.

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SHEETS • STRIP • PLATES • BARS • BILLETS — USS — PIPE • TUBES • WIRE • SPECIAL SECTIONS

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There is satisfaction in achievement . . . the knowledge that *BOTH* the supplier and the buyer have given their best . . . and the best in Prefabricated Insulated Piping for underground and overhead systems is RIC-WIL.

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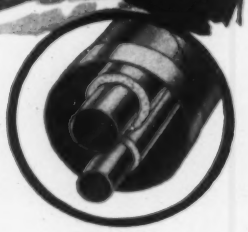

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OBITUARIES

Douglas S. Anderson, 82, dean emeritus of the school of engineering of Tulane University, New Orleans, La., died March 2 in New York City. He retired in 1936 after 44 years on the faculty. He was an 1890 graduate of Washington and Lee University.

James J. Sloyan, 54, Indianapolis manager for Gibbs & Hill, New York consulting engineers, died March 19. He was in charge of constructing the White River generating station for the Indianapolis Power & Light Co.

Sherman G. Swigart, 88, former county engineer of Summit County, Ohio, died in Akron March 17. He and his son operated the firm of S. G. Swigart & Son, engineers.

L. W. Pritchard, 56, an associate engineer for the city of Akron, Ohio, for the last 25 years, died March 10.

Forrest H. Claypool, 65, former right-of-way agent for the Ohio highway department, died March 9 in Chillicothe, Ohio.

Charles A. Maguire, 66, a founder and senior partner of the Charles B. Maguire Co., died at Providence, R. I., March 24. He formerly was commissioner of public works for Providence and later was chairman of the state's Metropolitan Sewer Commission. In recent years Mr. Maguire was active in the firm of Charles A. Maguire Associates, the total of whose projects planned amounted to almost a billion and a half dollars. Among the major works were the Mystic River Bridge and the Tiverton-Portsmouth Bridge over the Sakonnet River.

James A. Wilde, 68, retired design engineer for the Robins Conveyors division of Hewitt-Robins, Inc., heavy machinery manufacturers, died March 24 in Ridgewood, N. J.

Anti-pollution progress

Two-thirds of Indiana's stream cleanup program has been accomplished and there is legislation on the books aimed at preventing new pollution problems, according to a recent report by the State Stream Pollution Control Board. The report says eight more municipalities completed sewage works in the last year to bring the state's total to 102. It noted that the board recently approved 69 sets of plans for community sewer and treatment plant construction.

RESEARCH

ASTM begins $150,000 wood pole research program

A two-year research program has been started by the American Society for Testing Materials to establish more precisely the breaking strength of wood poles.

According to J. L. Markwardt, chairman of Committee D-7 on Wood, the research program has been under development for several years with the close cooperation of various interested agencies. As now planned, tests will be made on about 600 full-size poles of different species and on some 15,000 small specimens to determine the quality of the clear wood. The research is designed to replace existing inadequate and conflicting data on pole strength with a solid basis of technical information for revised specifications.

Objectives of the program are:

1. More accurate pole design standards.
2. Greater assurance of getting poles that are strong enough at reasonable cost.
3. New information on the effect of preservatives on pole strength.
4. Better specifications establishing accurate relationships among different species.
5. Substantial savings to buyers and processors of poles.

Standards to classify water adopted by Utah water group

Quality standards for surface and underground water sources have been adopted tentatively by the newly activated Utah Water Pollution Board, which will undertake to classify all water supplies according to the new standards after a series of public hearings.

Tentative standards classify "A" waters as those "suitable as a source for domestic supply without treatment of any type and meeting U. S. Public Health Service drinking water standards." It is believed the only Utah water meeting the "A" specifications will be from underground sources.

Class "B" waters were defined as "suitable as a source of domestic supply after having been treated by chlorination only" to meet PHS standards of a bacterial count of not more than 50 coliform organisms per 100 milliliters of water in any month. Board members "seriously doubt" whether any Utah surface waters can currently meet the "BB" standards.

(Continued on page 54)

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Model No. 50

REPAIR

Dirt . . . Wear . . . Repair—the three big troubles that impair every transit and level unless it's a Brunson. Dirt that gets between movable parts and causes binding. Wear from friction between movable parts that starts reducing accuracy from the day you first use the instrument. Costly maintenance to overcome the effects of dirt and wear.

Brunson has the answer to all three factors: dustproof, ball bearing construction. Dust is sealed out, the lubricant sealed in, and wear is practically eliminated by the smooth ball bearing action. That's why only Brunson instruments maintain their accuracy for years without costly routine maintenance.

Brunson instruments are the new standard of excellence—yet they cost no more. Write today—you'll be glad you did.

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"C" waters were labeled those "suitable for domestic supplies after having been treated by coagulation, sedimentation, filtration and disinfection (such as chlorination)" and meeting PHS standards of not more than 5,000 organisms per milliliter in any month. Most domestic water supplies in Utah are believed to be in this classification, although most supplies, including that of Salt Lake City, are treated solely by chlorination.

Class "D" waters "shall have no beneficial use except as specifically authorized by the board." All classifications except "D" were defined as suitable for use without treatment for irrigation, stock-watering, fish and wildlife propagation and recreation.

The tentative standards would prohibit discharge of wastes that would in any way lower classifications of the receiving water; they would also set standards on mineral content, floating and suspended solids.

The new Utah Water Pollution Board, established in 1953, has authority to prevent contamination of water but does not have power to compel cities to install treatment facilities if they are found to be using a contaminated domestic water supply without adequate treatment.

Control of canal seepage with bentonite improved

Field tests of controlling irrigation canal seepage through the use of bentonite have been begun by the Central Nebraska Public Power and Irrigation district of Hastings, Neb.

Bentonite, a talc-like mineral, expands 16 to 35 times its original volume when wet and in the past has been used chiefly where it could be mixed with the soil and rolled down or where, by mechanical suspension, it could be held in suspension in water until it soaked into the soil.

In the new process the bentonite is ground to pass a 200-mesh sieve and then fed into a jet pipe where 140 fine streams of water at 300 psi finely disperse the material. A pump then forces the mixture into a large mixing basin where it is mixed with the main volume of water flowing into the canal.

G. F. Johnson, chief engineer for Central Nebraska's Hastings district, said that because of the great expense of mixing bentonite with the soil in the bottom and sides of canals, it has not been widely used to seal off seepage losses from irrigation ditches. However, it is thought that the new method can be used at 15% of the cost of those previously employed.

Further, tests indicate that a better seal is obtained with the new procedure.

The field tests will be conducted on a ½-mi section of a sub-lateral near Smithfield, Neb., and have been preceded by nearly a year of laboratory experiments. These early tests were under the supervision of Mr. Johnson working with R. D. Dirmeyer, Jr., of the Bureau of Reclamation and with soils experts from Colorado A&M.

The treatment used on the present test is a solution of ½ to 1 per cent bentonite by weight. If the test is successful, a program will be completed to treat 51 mi of the lateral at a cost of approximately $150,000.

What next? Buildings shot from guns?

Whole wheat kernels—"puffed" to twenty times original size—are the basic ingredient of a new building board developed by Reed Research, Inc., Washington, D. C.

According to S. F. Reed, president of the firm, the material "has the greatest strength at the lowest cost of any competitive product I know." His estimate figures the cost of the new product at 60% to 75% of conventional materials.

Resins are used as a binder and other chemicals are added to make the material resistant to weather, insects and fungi. When these are combined with the "puffed" wheat under heat and pressure, the result is a building product said to be suitable for wallboard, door panels, etc.

Still in the research stage, the product was developed to provide an outlet for farm surplus.

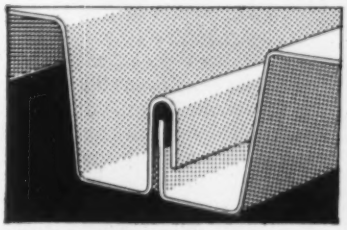
Research briefs . . .

• **Harvard University** School of Public Health has announced postgraduate scholarships for 1954-55 for public health engineers seeking additional training and research experience in one or more public health specialties leading to either a Master of Science in Hygiene or a Doctor of Science in Hygiene degree.

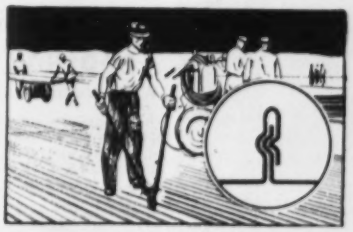
• **A graduate fellowship** in sanitation has been established at Rutgers University, New Bruinswick, N. J., by Rutgers graduate and trustee, John Van Nostrand Dorr. The fellowship was made available to the university for 1954-55 by the Dorrco Educational Trust, a Dorr Company unit founded to further educational and scientific purposes. It will be awarded about April 15.

Quickly erected Q-Deck helps lower roof fire hazard

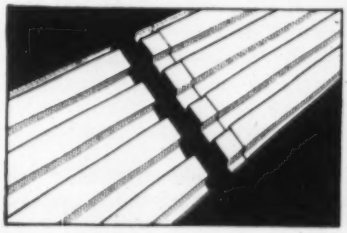
The many unique features of Robertson Q-Deck make it of special interest to the architect and engineer who is concerned about the fire hazard aspect of his flat roof design. To begin with, Robertson Q-Deck is designed with tight side and end laps to eliminate the need for an inflammable vapor seal. Its two-foot width and long span characteristics mean fewer joints, and its zinc-coated surface (or basic Galbestos) eliminates the need for field painting.



Robertson Q-Deck side laps are designed to form a standing seam. A seal in the form of a continuous caulking material assures a vapor-tight joint.



A special Robertson clamping tool mechanically fastens the side laps together, forming a steel fire barrier that remains intact as long as the structural supports are in place.



Ends of Robertson Q-Deck are sized and countersunk to produce a tight, smooth, two-inch lap joint. This lap, along with the tight side laps, provides a vapor-sealed roof construction.

Excessive amounts of asphalt are eliminated on Robertson Q-Deck because the adhesive is applied to the *insulation . . . not to the steel deck*. This also results in a better bond between the steel and the insulation.

Robertson

Q-DECK

a product of **H. H. Robertson Company**

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(WITH EXTENSION HEAD)

The new Rooshor, *extension type*, 8 ft. to 14 ft. (full 6 ft. adjustment) can be used as a flat-head shore, a male-head shore and as an extension shore by merely inserting any length S4S 4 x 4 into the steel head. It is instantly adjusted to "hairline" accuracy and has no pins or screw adjustments to become clogged or cause needless delays. Wooden upper members permit easy fastening of lateral or diagonal bracing.

THE STANDARD ROOSHOR
(WITH WOOD HEAD)

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Write for Bulletin 354.

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BOOKS

Tunnel and bridge shop talk

FAMOUS SUBWAYS AND TUNNELS OF THE WORLD—By Edward and Muriel White. 97 pp. Random House, 457 Madison Ave., New York 22, N. Y., $1.75.

FAMOUS BRIDGES OF THE WORLD—By David B. Steinman. 99 pp. Random House, 457 Madison Ave., New York 22, N. Y., $1.75.

Called children's books, these two volumes will charm any civil engineer and construction man who likes to talk shop. And what one doesn't?

In the first place, he will not be irritated by the minor errors of terminology that an expert usually detects in writings about his own field. And hardly a fact can be disputed. For these books are written by persons who are completely at home with their subject matter. Mr. White is an officer in the engineering and construction firm of Spencer, White and Prentis, New York specialists in foundation and underground work. And Dr. Steinman is a leading bridge designer.

Both books, too, read easily. Line drawing liven the text and in each volume there is a 12-page center section devoted to illustrations. The story outlines are similar, beginning with historical structures and the fundamentals of modern techniques, then telling about the significant contemporary structures of various types—bridges in Dr. Steinman's book; tunnels in the Whites'.

"Famous Subways and Tunnels of the World" manages to convey a sense of the constant hazards of underground work, as it moves from one triumph of construction method or design to another: How dynamite and mechanical drilling sped rock tunneling; how the shield and compressed air made subaqueous mud tunneling possible; how the problem of removing fumes from long vehicular tunnels was mastered. (The Holland Tunnel Fire of May 13, 1949, with its miraculous freedom from fatality, is recounted to illustrate how fully the ventilation problem was solved.)

Hazards also get their share of attention in Dr. Steinman's book, but that share is not as great, thanks to the fact that bridge building is not done underneath loose rock and uncertain dirt. But there are ever greater heights and spans, and new, more difficult foundation conditions. The lessons from such hard luck projects as the Quebec Bridge and Tacoma Narrows Bridge are combined with accounts of many successfully-pioneered ideas to present a picture of today's advanced state of the bridge building science.

Of his favorite field, suspension bridges, Dr. Steinman says that bridge engineers agree that a 10,000-ft suspension bridge can be built.

Miscellaneous notes

• **A second progress report** has been issued by the Research Council on Riveted and Bolted Structural Joints of the Engineering Foundation. It contains tentative conclusions reached by its project committees on the effect of bearing pressure on the strength of rivet joints, effect of rivet pattern on static strength and fatigue strength of structural joints, strength of rivets in combined shear and tension, fatigue strength of bolted structural joints, effect of grip on fatigue strength, fatigue strength of high-strength steel riveted joints, and fatigue tests on cumulative damage in structural joints. Titled "New Concepts in Structural Joint Design," the 44-page booklet may be obtained without charge by writing E. J. Ruble, chairman of the council, Association of American Railroads, 3140 South Federal St., Chicago 16, Ill.

• **Industrial use of water**—The last two circulars in a series of nine covering the industrial use of public water supplies of more than 1,000 large U. S. cities have been published by the U. S. Geological Survey.

Circular 283 includes data on public water supplies of 140 cities in the Middle Atlantic States. Circular 288 covers 103 cities and towns of New England. Each report contains information on the population supplied; ownership; sources and treatment of supplies; capacity of treatment plants; storage facilities for both raw and finished water; chemical analyses.

Now that all nine preliminary reports have been completed, specialists of the USGS have started to combine them into a revision of Water-Supply Paper 658—"The Industrial Utility of Public Water Supplies in the United States, 1932".

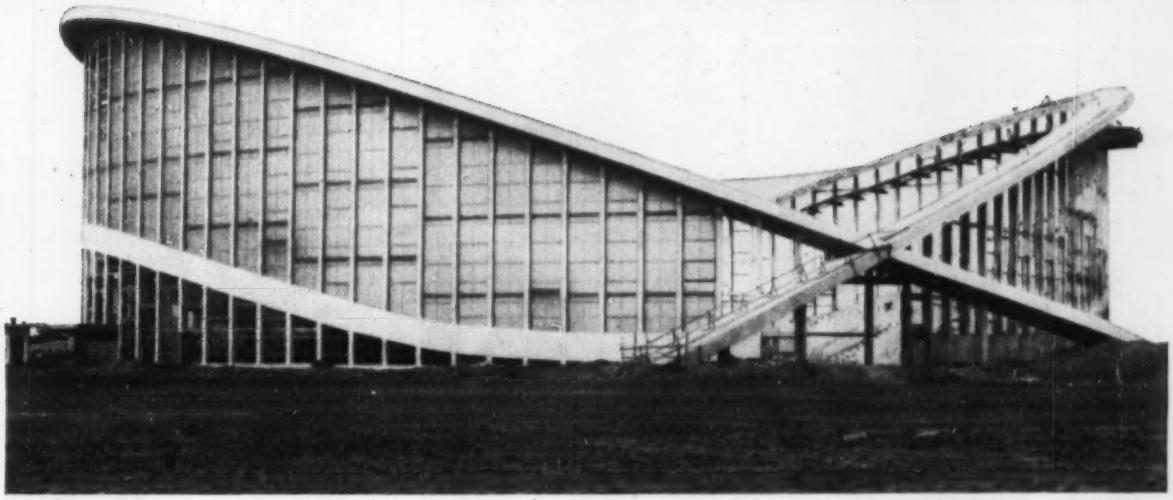
Latest available figures (1950) show the industrial use of water in the U. S. as more than 75 bgd taken from private sources, and about 6 bgd withdrawn from public water supplies.

Both new circulars—as well as the seven reports previously issued—may be obtained free from the Chief of

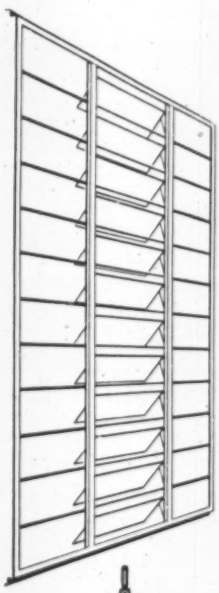
(*Continued on page 58*)

Imaginative Design

INCLUDES TRUSCON STEEL DONOVAN WINDOWS



North Carolina State Fair Arena, Raleigh, N. C.
William Henley Deitrick, Inc., *Architect*
Wm. Muirhead Construction Co., *General Contractor*
Matthew Nowicki, *Arch. Consultant*
Senerud-Elstad-Krueger, *Engr. Consultants*



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BOOKS

Distribution, Geological Survey, Washington 25, D. C.

New engineering books

WELDING ENGINEERING—By Boniface E. Rossi, 786 pp. McGraw-Hill Book Co., 330 West 42nd St., New York 36, N. Y. $8.00.

MORE WATER FOR TEXAS: The Problem and the Plan—By Walter Prescott Webb, 69 pp., University of Texas Press, Austin, Texas, $2.75.

MECHANICS OF ENGINEERING SOILS—Second Edition. By P. Leonard Capper and W. Fisher Cassie. 315 pp. McGraw-Hill Book Co., 330 West 42nd St., New York 36, New York. $6.50.

Reports and pamphlets

STUDIES OF SLAB AND BEAM HIGHWAY BRIDGES, PART V: TESTS OF CONTINUOUS RIGHT I-BEAM BRIDGES—Bulletin Series No. 416, University of Illinois Engineering Experiment Station, Urbana, Ill.

INVESTIGATION OF THE PRESSURE LOSSES OF TAKEOFFS FOR EXTENDED-PLENUM TYPE AIR CONDITIONING DUCT SYSTEMS—Bulletin Series No. 415, University of Illinois Engineering Experiment Station, Urbana, Ill.

FREQUENCY ANALYSIS OF HYDROLOGIC DATA WITH SPECIAL APPLICATION TO RAINFALL INTENSITIES—Bulletin Series No. 414, University of Illinois Engineering Experiment Station, Urbana, Ill.

EFFECT OF EDGE INSULATION UPON TEMPERATURE AND CONDENSATION ON CONCRETE-SLAB FLOORS—Building Materials and Structures Report 138, National Bureau of Standards. Superintendent of Documents, Washington 25, D.C. 20¢.

STUDIES OF STONE-SETTING MORTARS—Building Materials and Structures Report 139, National Bureau of Standards. Superintendent of Documents, Washington 25, D. C. 20¢.

PLANE COORDINATE INTERSECTION TABLES (2½ MINUTE) WYOMING—Special Publication No. 297, Coast and Geodetic Survey. Superintendent of Documents, Washington 25, D. C. 75¢.

PLANE COORDINATE INTERSECTION TABLES (2½ MINUTE) FLORIDA—Special Publication No. 296 Coast and Geodetic Survey. Superintendent of Documents, Washington 25, D. C. 50¢.

PLANE COORDINATE PROJECTION TABLES: ALABAMA—Special Publication No. 304, Coast and Geodetic Survey. Superintendent of Documents, Washington 25, D. C. 20¢.

LEGAL

Rights of subcontractors

Where the invitation for the submission of bids for the general contract provided that if such contractor contemplated subletting part of the work he should submit the name of the proposed subcontractor, the fact that the general contractor specified the name of another contractor to whom he planned to subcontract part of the work did not create any contractual relationship between the general contractor and the proposed subcontractor.[1]

In the above case, the general contractor, in submitting his bid, inserted the wrong name of the proposed subcontractor. Also, the bid of the one wrongfully named was $500 higher than the bid of the one who was intended to be named. The school board that asked for the bids had authority to, and did consent to, the substitution of the name of subcontractor to whom it was intended to award the subcontract.

(1) Klose v. Sequoia Union High School District et al., 258 P. 2d 515, District Court of Appeal of California, July 23, 1953.

Delay in supplying plans

An engineer is not responsible for delays in furnishing plans, in the absence of a definite stipulation as to when the same are to be furnished. The law implies only that the plans will be furnished within a reasonable time.

Where the contract employing the engineer provided that the services would be rendered at such times as the other party might direct, the engineer is entitled to a reasonable time after he receives the direction, to perform the services.

"Where both contracting parties contribute to the delay, neither can recover damages unless there is clear proof as to the apportionment of the delay and the expenses attributable to each party. Coath & Goss, Inc. v. United States, 101 Ct. Cl. 702, 714, 715."[1]

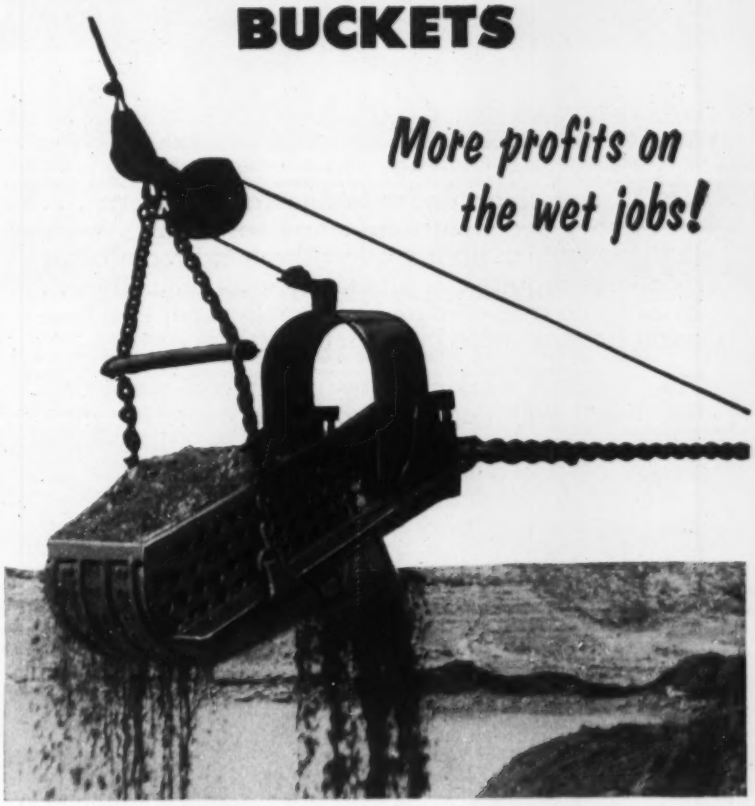
(1) Giffels & Vallet, Inc. v. Edw. C. Levy Co., 58 N.W. 2d 899, 903, Supreme Court of Michigan, April 13, 1953.

Contract must be approved

Where a contract for construction of a building provided that the work was to begin when the contract was approved by the prospective tenant, no valid contract exists in the absence of approval by said tenant.[1]

(*Continued on page 60*)

WELLMAN-WILLIAMS
PERFORATED DRAGLINE BUCKETS



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LEGAL

In the case above, the contractor was directed by the owner of the proposed building to proceed with the work of building the foundations. The prospective tenant refused to approve of the contract. The owner, thereupon, directed the contractor to discontinue the work and paid him for the work he had performed. The work was completed by another contractor and the original contractor brought the action to recover damages for breach of contract. He was denied a recovery for lack of a valid contract.

It is to be noted that the lease between the owner and the prospective tenant provided that the tenant was to pay over 50% of the cost of erecting the structure, hence the tenant had a substantial interest in the cost of erecting the building.

(1) Benes v. Hickox Bldg. Co., 112 N.E. 2d 553, Court of Appeals of Ohio, October 20, 1953.

What makes a contract

"The general rule is that where a public body advertises for bids, a good and binding contract is formed when the public body, acting by responsible officers, accepts a written bid of a bidder. * * * An exception to this rule is that a contract is not so created where a statute or municipal charter prohibits liability except where the contract has been executed according to prescribed formalities, or where the call for bids or the resolution of acceptance specifies that liability shall not occur unless the agreement is reduced to a formal writing. * * *."

"It is true that parties to an agreement may make its reduction to a formal writing and the execution of such writing a condition precedent to its effectiveness notwithstanding complete agreement to all its terms. * * * However, the general rule is that though the parties contemplate the ultimate execution of a more formal writing, the acceptance of a bid or offer results in a binding contract where none of the material terms remain unsettled or require future determination."(1)

(1) Berkeley Unified School District v. James I. Barnes Const. Co., 112 F. Supp. 396, U. S. District Court, May 18, 1953.

Architect's compensation

Where the plans and specifications for a building complied in all particulars with his contract of employment, the architect is not liable for damages because the cost of erecting the building was beyond the expectations and the financial liability of

his employer where the contract of employment contained no upset cost of erecting the structure.[1]

(1) Medical Arts Bldg. v. Ervin, 257 P. 2d 969, Supreme Court of Colorado, May 11, 1953.

Uncertainty as to damage does not bar recovery

In a recent case,[1] the court in its opinion reviewed many authorities which sustain the proposition of law that where it is shown that actual damages have been sustained, the fact that it is difficult to ascertain the exact amount of the damage sustained does not bar a recovery of damages.

The court in its opinion, quoted from Comment (a), Section 331 of Restatement of Contracts, 515, as follows: "The requirement of reasonable certainty does not mean that the plaintiff can recover nothing unless he establishes the total amount of his harm; nor does it mean that he cannot get damages unless he proves the exact amount of the harm. The requirement merely excludes those elements of harm that cannot be evaluated with a reasonable degree of certainty. There is usually little difficulty in proving the amount of the actual expenditures * * *. Furthermore, there are cases in which the experience of mankind is convincing that a substantial pecuniary loss has occurred, while at the same time it is of such a character that the amount of money is incapable of proof. In these cases the defendant usually has reason to foresee this difficulty of proof and should not be allowed to profit by it. In such cases, it is reasonable to require a lesser degree of certainty as to the amount of loss, leaving a greater degree of discretion to the jury, subject to the usual supervisory power of the court."

(1) Gaasland Co. v. Hyak Lumber & Millwork, Inc., 257 P. 2d 784, Supreme Court of Washington, June 8, 1953.

Lack of an express contract does not bar a recovery

"In a suit on an express contract for work and labor, where the work has been fully performed and only payment pends, recovery may be had as on an implied contract on quantum meruit [fair and reasonable value] if the evidence fails to show the express contract, but does sustain an implied contract."[1]

(1) Cook v. Saltzer, 257 P. 2d 228, Supreme Court of Idaho, May 12, 1953.

(These summaries of court decisions are prepared by I. Vernon Werbin, New York attorney and civil engineer.)

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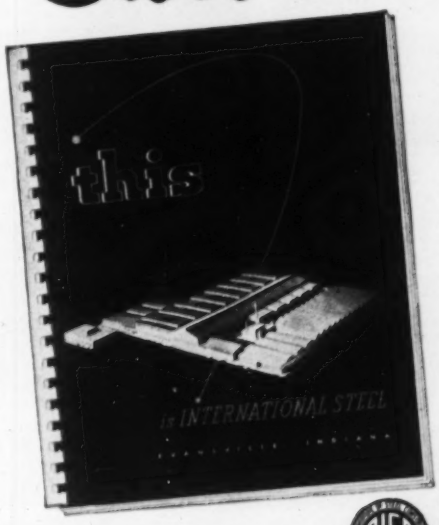

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CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded—First Section—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. O. WETZEL, L. M. WINISKI, M. E. SCIORRA, F. S. DEMBEK, Reports.
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

▲† **Me., Limestone**—HARDSTANDS, etc.—B.A. 4/6—U. S. Eng., 857 Commonwealth Ave., Boston, Mass., constr. addnl. hardstands, apron, taxiway extens., maintenance hangar apron, Limestone Air Force Base, ENG-19-016-54-72. $1,000,000. Plans deposit $25, refundable. CD 12/3.

▲† **Me., Bangor**—NATIONAL GUARD FACILITIES—B.A. 4/15—U. S. Eng., 857 Commonwealth Ave., Boston, Mass., Air National Guard facilities, hangar 212x203 ft., warehouse, utility features, Bangor Air Force Base, ENG-19-016-54-96. $1,500,000. Seeley Stevenson, Value & Knecht, 101 Park Ave., New York, N. Y., archts.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Morrison-Knudsen Co., Inc.** and **Landers & Griffin Co., Inc.**, 122 E. 42nd St., New York, N. Y., CA, $2,911,609, Schedules 1 and 2, constr. roads, railroad and utilities Air Force Base, ENG-19-016-54-59. PORTSMOUTH, N. H. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. Bids Feb. 26, awarded Mar. 12. CD 3/8, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **G. L. Rugo & Sons, Inc.**, 80 Boylston St., Boston, Mass. CA $1,194,000. HIGH SCHOOL Central and Williams Sts., STONEHAM, MASS. Town, Supt. Schools, Central St., Stoneham, Mass. CD 3/17, under LB.

▲ **E. Turgeon Constr. Co., Inc.**, 42 Weybosset St., Providence, R. I. CA $2,119,650, est. $2,500,000. HIGH SCHOOL, Oakland Beach Sect., WARWICK, R. I. City, Supt. Schools, City Hall, Warwick, R. I. Bids Mar. 17. CD 2/24.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

New Jersey—B.A. 4/8—New Jersey Hy. Auth., State Hy. Dpt. Office Bldg., 103 Parkway Ave., Trenton, water supply well systems for various areas located on Right-Of-Way of Garden State Parkway south of Raritan River, incl. Cheesequake Service Area; Manasquan Service Area, Forked River Service Area, Absecon Service Area, Seaville Service Area, Telegraph Hill Administration Area, Toll Areas "S" (Shrewsbury) No. 3B, "A" (Asbury) No. 4 L-1 and L-2 (Lakewood) No. 4 A, "D" (Dover) No. 5, "O" (Ocean) No. 6, "N" (New Gretna) No. 7, "T" (Tilton) No. 7B, "O" (Cape May) No. 8, Manasquan Maintenance Area, Barnegat Maintenance Area, Avalon Maintenance and Police Area, Pleasant Plains Police Area, Bass River Police Area, Garden State Parkway, Contract 148, Sections 7, 8, 10 and 11. Plans deposit $10.

▲ **NEW YORK**—B.A. 4/14—Triborough Bridge & Tunnel Auth., Admin. Bldg., Randall's Island, New York, Zone 35,

No. 1, grade separation structure at Long Island R.R., Main Line, Contr. No. QME-3.

No. 2, modifications at Connecting Hy. Interchange, Contr. No. QME, Queens Midtown Expressway, Queens Boro. Plans deposit $10. Andrews, Clark & Buckley, 305 E. 53 St., New York, Zone 21, consult. engrs. CD 10/13/52, under Streets and Roads.

New Jersey—B.A. 4/15—The Central Railroad Co. of New Jersey, at offices S. L. Mapes, ch. engr., Jersey City Terminal, Room 44, foot of Johnston Ave., Jersey City, Contract "A" structural work; Contract "B" grading for grade crossing elimination through Dunellen and Plainfield. Plans deposit $25 each.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg,

Allegheny Asphalt & Paving Co., 801 Bingham St., Pittsburgh 3, Pa., LB $734,333, contr. 9,990 ft. road, plain c. conc. base with either bit. or vitri. brick surf., T.R. 19; 51; 88, Pittsburgh, Allegheny Co.;

Kittanning Constr. Co., R.D. 3, Kittanning, Pa., LB $273,867, constr. 9,572 ft. crushed aggregate base with bit. surf. 18 ft. wide, L. R. 03001 (R-3), Gilpin Twp. Armstrong Co.;

Edward A. Daylor Co., Inc., P.O. Box 551, Coatesville, Pa., LB $290,474, widn. 26,770 ft. existing road left and right with crushed aggregate base and bit. surf. surfacing new and existing base, T.R. 122, Upper Oxford, West Fallowfield and Highland Twps. Chester Co.;

Kofman's, 130 Dunlap St., Bellefonte, Pa., LB $144,291, constr. 5,074 ft. crushed aggregate base with bit. surf. various in width, T. R. U. S. 22, Lock Haven, Clinton Co.;

Mayer Bros. Constr. Co., 1227 W. 18 St., Erie, Pa., LB $215,758. constr. 4,248 ft. plain c. conc. base with bit. surf. variable in width, T. R. 505, Erie, Erie Co.;

N. B. Putman Co., Honesdale, Pa., LB $416,268, widn. and overlay 36,143 ft. existing road with crushed aggregate base and bit. surf. variable in width, T. R. 22, 100, Macungie Boro, Lower Macungie and Upper Macungie Twps., Lehigh Co.;

Burrell Constr. & Supply Co., New Kensington, Pa., LB $263,583, widn. left and right 27,556 ft. existroad with crushed aggregate base and bit. surf. surfacing new and existing base, T. R. 119, Hempfield, Unit and Salem Twps., Westmoreland Co.;

E. M. Bros., Inc., Clearfield, Pa., LB $1,065,894. constr. 34,366 ft. crushed aggregate base and bit. surf. 22 ft. wide, T. R. U. S. 309 and 22, North Towanda and Ulster Twps., Bradford Co. Bids Mar. 19. CD 2/17.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **The J. A. Robbins Constr. Co.**, 10 S. 18 St., Phila., Pa., Owner Builds. $2,000,000. WAREHOUSE CENTER, 34-acre site on Baltimore Pike, YEADON, PA. Great Atlantic & Pacific Tea Co., 32 and Chestnut Sts., Phila., Pa., lessee. CD 12/1/50.

▲ **Master Guild Co.**, 1319 F St. N.W., Wash., D. C. CA Est. $1,200,000. HOTEL, Indian Head Rd. and Livingston Rd., Forest Heights, Prince Georges Co., UPPER MARLBORO, MD. Biltmore Hotel Corp., 18 and Q St. N.W., Wash., D. C. E. W. Syme, Washington Bldg., Wash., D. C., archt.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

▲ **Fla., Coral Gables**—B.A. 5/4—City, City Hall, 191,230 lin. ft. gravity sewers, 19,489 lin. ft. pressure sewers one 2,500,000 g.p.d. sewage plant, Over $1,000,000. Plans deposit $100. M. B. Garris, 622 S.W. 27 Ave., Miami, engr. CD 6/9.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Tecon Corp.**, 1201 Main St., Dallas, Tex., LB, $4,159,384, paving apron, runways, taxiways, Airforce Base, JACKSONVILLE, FLA. U.S. Eng., Gazette Bldg., Little Rock, Ark. Bids Mar. 18. CD 3/12.

▲† **Carl E. Maxey Constr. Co.**, Lubbock, Tex., CA, $2,334,505, AMC warehouse, roads and utilities, CD 3/16, under LB;

Brock & Blevins, Rossville, Ga., CA $207,466 central steam plant addn., Brookley Air Force Base, MOBILE, ALA. U.S. Eng., P.O. Box 1169, Mobile 7, Ala.

KENTUCKY—Commonwealth of Ky., Dpt. Hys., Frankfort,

R. R. Dawson Bridge Co., Bloomfield, Ky. LB $319,693, substructre, grade, drain, approaches to bridge 0.493 mi. Beattyville-Booneville Rd., S 449 (1) SP 65-49, Lee Co. Bids March. 12. CD 2/25.

▲ **KENTUCKY**—Commonwealth of Ky., Dpt. Hys., Frankfort,

Nally & Gibson, Springfield, Ky. LB $398,008. bit. surf. Class I waterbound macad. base 5.544 mi., New Castle-Carrollton Rd., F 536 (3), SP 52-7, Henry Co.;

Greer Bros. & Young, London, Ky. LB $202,863. bit. surf. Class-CI limestone aggregate 2.636 mi. Hindman-Cody Rd., S 24 (3), SP 60-58, Knott Co.;

M. T. Codell & Co., Inc., Winchester, Ky. LB $187,149. traffic bound limestone 1.365 mi. US23-US119 Connection Rd., F 544 (1), SP 98-963, Pike Co.,

Sam Nally Co. & Ellis Kelly Co., Bardstown, Ky. LB $296,702. c.conc. wid'n. bit. surf. Class I 4.381 mi. Elizabethtown-Louisville Rd., Brandenburg-Louisville Rd., FI 79 (20), F 203 (2), SP 82-3, SP 82-23, Meade Co.;

Greenville Quarries, Greenville, Ky. LB $67,737. reconstr. traffic bound limestone 4.591 mi. Petrie-Utility Rd. (US 60-Utility Rd.), RS 46-357, Hancock Co.; LB $80,858. reconstr. traffic bound limestone 9.549 mi. Rockcastle-Mershon Bridge Rd., RS 111-314, Trigg Co.;

L. P. Cavett Co., Lockland, O. LB $75,709, bit. road mix Class C-1 14.208 mi. Junction City-Forkland-Gravel Switch Rd., RS 11-320, Boyle Co.;

Wm. M. Hooper & Robert Hite, Caneyville, Ky. LB $62,609, reconstr. traffic bound limestone 4.543 mi., Old Waynesburg-O.K. Rd., RS 69-450, 100-835, Lincoln-Pulaski Counties;

Forcum-James Co., Dyersburg, Tenn. LB $101,832, local bank or creek grav. 2.354 mi. Mayfield-Wickliffe Rd., F 508 (5), SP 20-124, Carlisle Co. Bids Mar. 12. CD 2/25.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Merando, Inc.**, 813 Fourth St. N.E., Wash., D. C. LB $2,035,000, Alexandria HIGH SCHOOL, Seminary Rd. at Valley Lane, ALEXANDRIA, VA. City Bd. Educ., 208 N. Columbus St., Alexandria, Va. Bids Mar. 17. CD 2/24.

▲ **Russell & Raulerson Constr. Co.**, 5360 Palm Ave., Hialeah, Fla., Force Account, $1,000,000, 100 RESIDENCES, HIALEAH, FLA.

† **Farnsworth & Chambers**, Bienville Ave., New Orleans, La. CA $682,000. LAUNDRY and DINING HALL, addns., alterations, Veterans Admin. Hospital, GULFPORT, MISS. Veterans Admin., Munitions Bldg., Wash., D. C. CD 3/1, under LB.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects inviolved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
B.A.	Bids Asked
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

MIDDLE WEST

BIDS ASKED—BUILDINGS

Ill., Chicago—GYMNASIUM, etc.—Bids Asked—Angel Guardian Orphanage, Thome and Winchester Sts., gymnasium and swimming pool $500,000. Gaul & Voorsen, 228 E. Superior St., Zone 11, archts. CD 10/26.

▲ **O., Youngstown**—HOUSING—Bids Asked—Youngstown Metropolitan Housing Auth., 976 W. Federal St., Kimmel Brook Homes. Bids Mar. 25, 1953 rejected. CD 3/30, under LB.

SOON LETS CONTRACT—BUILDINGS

▲ **Wis., Milwaukee**—PLANT—Luick Dairy Co., 505 E. Capitol Dr., Zone 12, soon lets contract milk processing plant addn. $1,000,000. Johnson & Johnson, 111 W. Washington St., Chicago, Ill., archts. CD 3/9.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

A. Olson Co., 1225 Commercial St., Waterloo, Ia., and **Bethlehem Steel Co.**, 410 N. Michigan Ave., Chicago 4, Ill., CA, Est. $499,505, bridge over Rock River, Sterling, MORRISON, ILL. Whiteside Co., Court House, Morrison, Ill. Awarded Mar. 8.

R. W. Constr. Co., 3140 W. Fond du Lac Ave., Milwaukee, Zone 10, Wis., CA, $163,510, Project No. 1; **Tomaro Contractors**, 5317 S. Lake Dr., Cudahy, Wis., CA, $84,434, Project No. 2;

Carle & Tomassini, 4375 N. 124 St., Butler, Wis., CA, $63,676, Project No. 3, storm sewers in District No. 1, WHITEFISH BAY, WIS. Village, 801 E. Lexington Blvd. Milwaukee, 11 Wis. Grand total $311,620. Bids March 15. CD 3/8.

BUILDINGS

LOW BIDS AND CONTRACTS

Kietzman Realty Co., 410 S. Lake St., Gary, Ind., Own Forces, $700,000, 65 HOMES, south of GARY, IND.

▲ **Marquis Manor Homes**, Sumner Ave. and Meridian St., Indianapolis, Ind., Owner Builds, $1,250,000. 85 HOMES in southern suburbs, INDIANAPOLIS, IND.

(Continued on page 64)

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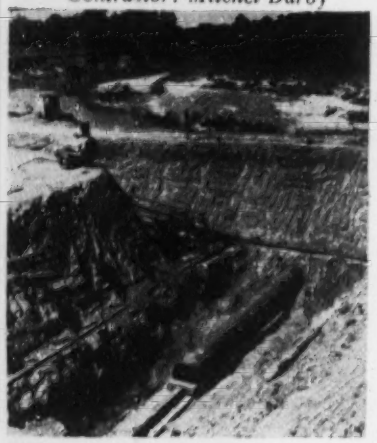
Victoria, Texas

Contractor: Mitchel Darby



PRE-DRAINAGE SOLVES JACKING PROBLEM

SOIL COMPOSITION of the above embankment (see photo) was as follows: first 18 ft, grey clay; below this, a 5-ft layer of coarse sand and large gravel flooded with ground water. Through this water-bearing section, contractor must jack an outfall line of 48-in. diameter—jack this big pipe a distance of 60 ft to the adjacent river.

• Old-timers can recall what dismay such water-fighting would once have caused. Today, with modern wellpoint methods, Griffin engineers found a quick, economical solution. Using 2 parallel (but unconnected) header lines—one on either side of the embankment, in a "railroad-track" effect—they successfully lowered water to the required depth. Note separate wellpoint system controlling ground water in jacking pit.

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WELLPOINT CORP.

881 East 141st Street, New York 54, N. Y.
Hammond, Ind. Houston, Tex. Jacksonville, Fla.

In Canada: Construction Equipment Co., Ltd.
Toronto Montreal Halifax

(Continued from page 62)

Henderson Constr. Co., 810 State St., Hammond, Ind., Own Forces, $650,000, 30 HOMES in Hammond and SCHEREVILLE, IND.

Owner, c/o Rosen & Horowitz, archts., 53 W. Jackson St., Chicago, Zone 4, Ill., Own Forces, $600,000, four 2 story, 60-unit APARTMENTS. CHICAGO, ILL.

▲ **James McHugh Constr. Co.**, 6449 S. Park Ave., Chicago, Ill., CA, $4,000,000. 12 story GENERAL BLDG., Chicago and Wabash Aves., CHICAGO, ILL. Holy Name Cathedral, 730 N. Wabash St., Chicago 11, Ill. McCarthy & Smith, 69 W. Delaware St., Chicago 10, Ill., archts. Awarded Mar. 8.

▲ **Greta Lederer**, 330 Tudor Court, Glencoe, Ill., Own Forces, $2,000,000, 50 HOMES, Strawberry Hill and Westwood Acres both subdivisions, GLENCOE, ILL. Milton Schwartz, 20 E. Hunn St., Chicago 10, Ill., archt.

Realty Constr. Co., 5909 Lincoln Ave., Morton Grove, Ill. Own Forces, $700,000, 40 HOMES, MORTON GROVE, ILL.

▲ **Ladd Enterprises**, 5532 W. Division St., Chicago, Ill. Own Forces, $1,800,000. 150 HOMES near NORTHBROOK, ILL.

Wood Constr. Co., 3122 Laramie St., Chicago, Ill. Own Forces, $575,000. 30 HOMES, SKOKIE, ILL.

W. N. LaBastille, Inc., 111 W. Jackson St., Chicago, 4, Ill. CA, $700,000 SCHOOL, WAUKEGAN, ILL. Immaculate Conception Parish, 520 Grand Ave., Waukegan, Ill. Bids Feb. 23, awarded Mar. 9. CD 2/16.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

▲ **Ia., Clinton**—B.A. 5/6—City of Clinton Bridge Comn., P. O. Box 70, total of 7 contracts for construction of two-lane highway bridge and approaches over Mississippi River between city of Clinton, Ia. and East Clinton, Ill., incl. Contract No. 1, earthwork. Plans deposit $20; Contract No. 2, bridge substructure, Contract No. 3, bridge superstructure. Plans deposit $35 each; Contract No. 4, approach roadway paving; Contract No. 5, administration bldgs. and toll houses; Contract No. 6, electrical wiring and electrical equip. Contract No. 7, Illinois Approach Overpasses. Plans deposit $20 each. Modjeski & Masters, State Street Bldg., Harrisburg, Pa., consult. engrs; adv. ENR 4/1. CD 12/28/45.

BIDS ASKED—BUILDINGS

▲ **Tex., Houston**—BANK, etc.—B.A. 4/26—At office Kenneth Franzheim, archt., 2402 Crawford St., Houston, (selected list bidders) 24 story bsmt., steel f., granite on brick, bank and office, $4,500,000; parking garage, $500,000 for Second National Bank of Houston, 800 Main St. H. E. Bovay, Jr., M. Esperson Bldg., Reginald F. Taylor, Bankers Mortgage Bldg., and Ward Butterwick, 2303 LaBranch St., engrs. CD 3/12.

SOON LETS CONTRACT—BUILDINGS

▲ **Tex., Freeport**—POLYETHYLENE MFG. FACILITIES—Dow Chemical Co., Freeport, soon lets contract constr. six story bldgs., total 63,000 sq. ft., steel frames, cement asb. sidings, etc. for addnl polyethylene mfg. facilities. Approx. $1,000,000. CD 3/10.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Weymouth Constr. Co.**, 2174 E. Person St., Memphis, Tenn. CA $1,475,160. concrete mattresses Caruthersville, Mo. and Helena, Ark., Inv. 54-67, MISSOURI AND ARKANSAS. U. S. Eng., P. O. Box 97, Memphis 1, Tenn. Bids Feb. 23. CD 1/4.

▲ **TEXAS**—State Hy. Comn., Austin,

Austin Bridge Co., P.O. Box 1590, Dallas 1, Tex., LB $1,192,710, 0.491 mi. San Jacinto River Bridge, Hy. ST 73, Proj. I 1052 (15), Harris Co. Bids Mar. 16. CD 2/23.

▲ **TEXAS**—State Hy. Comn., Austin,

Ballenger Constr. Co., P.O. Box 943, San Benito, Tex., LB $99,565, widn., flexible base and b. conc. 3.719 mi. Hy. US 281, Proj. S 785 (2), Hidalgo Co.;

Bell, Braden, Barker & Gilvin, Inc., P.O. Box 2268, Amarillo, Tex., LB $148,062, flexible base and surf. and F. W. & D. Ry. overpass 5.85 mi. Hy. SH 51, Proj. S 15101 (8), Oldham Co;

E & M Bohusky Constr. Co., P.O. Box 1226, Amarillo, Tex., LB $124,810, grading, structures, base and surf. 11.14 mi. Hy. FM 491, Proj. S 1025 (3), etc., Hidalgo Co.;

John F. Buckner & Sons, P.O. Box 76, Cleburne, Tex. LB $89,139, grading, structures, flexible base, two course surf. tr. 4.167 mi. Hy. SH 24, Proj. S 441 (1), Jack Co.;

Cage Bros., 6559 N. San Pedro St., San Antonio, Tex., LB $106,912, grading, structures, base and surf. 3.715 mi. Hy. FM 1289, Proj. & 1820 (2), Calhoun Co.;

Harry Campbell, Rte. 5, Box 68-A, Abilene, Tex., LB $193,112, flexible base, b.conc. 3.129 mi. Hy. US 67 and 84, Proj. F 583 (13), Brown Co.;

Collins Constr. Co., of Texas, P.O. Box 1192, Austin 6, Tex., LB $87,524, flexible base shoulders and b. conc. 6.31 mi. Hy. US 81, Proj. C 15-10-7, etc. Travis Co.;

Ivan Dement, Inc., P.O. Box 1287, Amarillo, Tex., LB $93,573, grading, structures, base and surf. 8.744 mi. Hy. FM 2046, Proj. S 1813 (1), Taylor Co.;

M. E. Dewberry, Rte. 9, Box 77, Tyler, Tex., LB $108,063, grading, structures 2.015 mi. Hy. ST 87, Proj. C 304-4-9, Sabine Co.;

J. R. Fanning & Henry Stafford, P.O. Box 1278, Lubbock, Tex., LB $280,880, flexible base, four course surf. tr. 12.417 mi. Hy. SH 290, Proj. S 807 (2), Hockley Co.;

E. W. Hable & Sons, P.O. Drawer 650, Corsicana, Tex. LB $87,267, grading, structures, base and surf. 1.931 mi. Hy. FM 2177, Proj. R 882-1-1, Orange Co.;

T. F. Jones Constr. Co., Lubbock, Tex., LB $227,038, recondition flexible base, one and three course surf. tr. 11.269 mi. Hy. US 380, Proj. C 298-1-18, Garza Co.; LB $102,482, grading, structures, base and surf. 12.357 mi. Hy. FM 300 and FM 2066, Proj. S 1808 (2), etc., Terry Co.;

Killian-House Co., 4600 Broadway, San Antonio, Tex. LB $65,480, b.conc. 8.318 mi. Hy. US 81, 87, 181, 281 and SH 16, Proj. C 17-1&2-4&16, etc. Bexar Co.; LB $189,627, flexible base and b. conc. 9.021 mi. Hy. US 281, Proj. C 73-2&3-19&14, Bexar and Atascosa Counties,

Ernest, Loyd, P.O. Box 1120, Fort Worth, Tex., LB $64,650, grading, base and surf. 7.043 mi. Hy. FM 2020, Proj. S 1801 (1), Ector Co.; LB $93,319, grading, structures, base 0.645 mi. Hy. FM 116, Proj. C 724-1-8, Coryell Co.;

Harry Newton, Inc., Graham Land Office Bldg., Graham, Tex., LB $88,954, grading, structures, base, surf. 4.105 mi. Hy. FM 1530 and 1742, Proj. S 1972 (1), Delta Co.;

Holland Page, P.O. Box 1181, Austin 6, Tex., LB $162,553, flexible base, b. conc. 9.62 mi. Hy. US 80 and FM 2119, Proj. FI 390 (7), etc., Reeves Co.;

Dan Pennington, Grapeland, Tex., LB $65,135, grading, base and surf. 8.633 mi. Hy. FM 831, Proj. V 1145-1-7, etc. Leon Co.; LB $106,672, grading, structures, base, surf. 13.2 mi. Hy. FM 1962, Proj. R 1846-1-1, etc., Sutton Co.;

South Texas Constr. Co., P.O. Box 3536, Corpus Christi, Tex., LB $60,905, widn., grading, structures, surf. and curb and gutter 0.766 mi. Hy. US 77 and 83, Proj. C 39-9-14, Cameron Co.;

Strain & Brown, Inc., P.O. Box 1057, San Angelo, Tex., LB $224,467, flexible base and b. conc. 19.02 mi. Hy. SH 51, 302, FM 666, Proj. C 228-6-9, Ector Co.;

C. Hunter Strain, P.O. Box 1057, San Angelo, Tex., LB $222,279, hot mix b. conc. 36.086 mi. Hy. US 60, Proj. C-6&7-26&22, etc. Taylor and Callahan Counties. Bids Mar. 16. CD 2/23, 3/2.

▲ **TEXAS**—State Hy. Comn., Austin,

Harry Campbell, Rt. 5, Box 68-A, Abilene, Tex., LB, $103,851, 2.486 mi. Proj. F-19 (13) Eastland Co.; LB $112,821, 8.78 mi. Proj. C-150-2-8 Lalano Co.;

Cage Brothers, 6559 N. San Pedro St., San Antonio, Tex., LB, $112,983, 13.074 mi. Proj. S-1049 (3), etc. Dawson and Lynn Counties, CD 3/2; LB $153,260 2.391 mi. Proj. F-542 (6), Lavaca and De Witt Counties, CD 2/3;

Henry Stafford P.O. Box 1047, Lubbock, Tex. LB, $74,813 9.352 mi. Proj. S-1678 (1), Cochran Co.;

C. W. Livingston, La Porte, Tex., LB, $141,961 2.905 mi. Proj. S-1857 (1), Galveston Co.;

John F. Buckner & Sons, P.O. Box 76, Cleburne, Tex., LB $205,194, 11.114 mi. Proj. S-1566 (2), Garza and Crosby Counties;

R. C. Buckner, P.O. Box 609, Jacksonville, Tex., LB $150,239, 5.558 mi. C-1096-3-2, Liberty Co.;

Collins Constr. Co. of Texas, P.O. Box 1192, Austin, Tex., LB, $78,915. 1.073 mi. Proj. C-5-2-16 etc., Midland Co. CD 2/23;

Holland Page, P.O. Box 1181, Austin, Tex., LB, $138,013 1.283 mi. Proj. C 143-1-13, Bexar Co.;

South Texas Constr. Co., P.O. Box 3536, Corpus Christi, Tex., LB, $179,153, 10.965 mi. Proj. R-220-7-6, Cameron Co.;

A. L. Sheppard, P.O. Box, 1871, Vernon, Tex., LB, $122,170 10.209 mi. Proj. S1019 (3); etc. Dickens Co.;

The Jarbet Co., Box 5008, Beacon Hill Station, San Antonio, Tex., LB, $66,300, 10.268 mi. Proj. C-142 3-8, Kerr Co.;

E. E. Hood & Sons, Box 6097, Harlandale Station, San Antonio, Tex., LB, $123,718, 19.425 mi. Proj. C-17-5-24, etc., Medina Co.;

D & H Constr. Co., P.O. Box 7053, Dallas, Tex., LB, $260,976 267.789 mi. Proj. C-30-2-14, etc. Ochiltree, Dallas, Potter, Deaf Smith, Geay, Carson, Roberts, Moore, Lipscomb and Hansford Counties;

Worth Constr. Co., P.O. Box 531, Ft. Worth, Tex. LB $1,207,457, 5.795 mi. Proj. I-305 (5) etc. Orange Co.;

Public Constr. Co., P.O. Box 380, Denton, Tex., LB $72,066 9.999 mi. Proj. C-200-5 & C-14 & 12, Tyler Co. CD 3/2. Bids Mar. 17.

BUILDINGS

LOW BIDS AND CONTRACTS

Parsons Constr. Co., 2512 Deer Park Blvd., Omaha, Neb. LB. $530,750, general constr. Monroe Elementary SCHOOL, 52nd and Spalding Sts., OMAHA, NEB. Bd. Educ., 3902 Davenport St., Omaha, Neb. Bids Mar. 16. CD 2/18.

West Texas Builders, Lubbock, Tex., CA $745,800, general constr. Bonham Junior HIGH SCHOOL, ODESSA, TEX. Ector County Independent School Dist., c/o supt., Odessa, Tex. Bids Mar. 16. CD 2/10.

▲ **J. J. Fritch Constr. Co.**, 6834 Harry Hines Blvd., Dallas, Tex., CA $2,250,170, general constr. State HOSPITAL Proj., SAN ANTONIO, TEX. Bd. for Texas State Hospitals & Special Schools, 45 and Lamar Sts., Austin, Tex. Bids Mar. 11. CD 3/16, under LB.

FAR WEST

BIDS ASKED—BUILDINGS

▲ **Calif., Bakersfield**—B.A. 4/30—Mercy Hospital, 2215 Truxton Ave., 4 story, rein.-con. Mercy Hospital addn. $1,250,000. Frank A. Georgeson, 355 Stockton St., San Francisco, archt. CD 7/27.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

WASHINGTON—State Hy. Comn., Olympia,

P. L. Saddler, P.O. Box 898, Wenatchee, Wash., LB, $525,694, 8.355 mi. Hy. 7-C, Grant Co.;

Lone Pine Paving Co., Yakima, Wash., LB, $64,189 73.33 mi. Hys. 3, 11, 3-H and 4C, Whitman, Adams, Spokane and Lincoln Counties;
C. & E. Constr. Co., Inc., Box 1545, Yakima, Wash. LB, $287,362, 4.399 mi. Hy. 3, F.A.P. F 018-4 (6) Walla Walla Co. Bids Mar. 16. CD 3/2.
▲† **James I. Barnes Constr. Co.**, 299 Kansas St., San Francisco, Calif., LB, $1,973,484 double cantilever maintenance hangar, Larson Air Force Base, ENG-45-165-54-11, MOSES LAKE, WASH. U. S. Eng., City-County Airport, Walla Walla, Wash. Bids Mar. 17. CD 3/10.
▲† **Lewis Constr. Co.**, 1711 Jackson St., Seattle, Wash., LB, $1,974,900, est. $2,340,529, 3 story, rein.-con. HOSPITAL, Fairchild Air Force Base, Inv. 54-123, SPOKANE, WASH. U. S. Eng., 4735 E. Marginal Way, Seattle, Wash. Bids March 16. CD 2/19.
† **Vinnell Co., Inc.**, 1145 Westminister Ave., Alhambra, Calif., LB, $372,048, Lopez Flood Control Reservoir Pacoima, Los Angeles Co., CIVENG-04-353-54-27, CALIFORNIA. U S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Mar. 17. CD 3/5.

CANADA

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Anglin-Norcross Quebec Ltd.**, 892 W. Sherbrooke St. Montreal, Que., CA, $2,500,000, main PLANT buildings, incl. packing plant;
Komo Constr. Ltd., 1500 St. Vallier St. Quebec City, Que., CA, $160,000 CRUSHER PLANT, main STORAGE PLANT and SUB-STATION, BEAUPORT EAST, QUE. St. Lawrence Cement Ltd., Blvd. d'Orleans, Beauport East, Que., Surveyor & Assocs., 1440 Ste. Catherine St., Montreal engrs. H. J. Doran, 5806 Monkland Ave., Montreal, Que., archt.

ALASKA

LOW BIDS AND CONTRACTS

Alaska, Cordova—SCHOOL—B.A. 4/21—Alaska P. Wks., Dpt. Interior, Juneau, 2 story, bsmnt., elementary school, 50-A-161. $675,000. Plans deposit $25. CD 10/23.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **ALASKA**—Alaska Road Comn., Dpt. Interior, 4 and Harris Sts., Juneau;
Lytle & Green and S. Birch & Sons, Securities Bldg., Seattle, 1, Wash., LB $1,276,096, est. $1,299,740, plant mix paving 6.3 mi. Glenn Hy., Big Timber or Porcupine, Proj. C1, D1. Bids Mar. 16. CD 2/19.

Proposed Projects

WATER SUPPLY

▲ **Colo., Colorado Springs**—City, City Hall, Montgomery Dam to store Blue River Water. $3,000,000. Black & Veatch, 4706 Broadway, Kansas City, Mo., consult. engrs. CD 10/12.

SEWERS, WASTE DISPOSAL

▲ **Ont., London**—London Council, Howard Elson, reeve, Arvia via London, P.O., sewerage sys. and sewage disposal plant just east of here. $1,700,000. R. C. Dunn, Twp. Offices, engr. CD 6/22/50.

STREETS AND ROADS

▲ **OHIO—Ohio Turnpike Comn., 139 Gay St., Columbus,** Zone 1, two service areas, incl. service station, parking and parking areas at each of the following sites.
(1) 4 mi. west of Ohio-Pennsylvania line;
(2) northeast of Ravenna in the most heavily traveled portion of the turnpike east of Cleveland;
(3) at a distance west of the State Rte. U.S. 21 interchange in southern Cuyahoga Co.;
(4) west of Elyria on the most heavily traveled portion of the entire turnpike;
(5) northeast of Fremont;
(6) approx. 14 mi. southeast of Toledo;
(7) near Swanton, west of Toledo;
(8) northeast of West Unity, approx. 20 mi. east of the Ohio-Indiana line. $750,000 each. CD 7/8/52.

EARTHWORK, WATERWAYS

▲ **California**—Sonoma Co., Court House, Santa Rosa, $5,598,000 bond election June 8, water distr. sys. incl. dam on Russian River, Sonoma Co.

AIRPORTS

▲† **N. Y., Newburgh**—HEADQUARTERS BLDG.—U. S. Eng., 80 Lafayette St., New York, Zone 13, plans by Mackenzie, Bogert & White, 5 E. 57 St., New York, Zone 22, headquarters bldg., Fy 1955, Stewart Air Force Base. $3,000,000-$5,000,000. CD 2/26.
▲ **Tex., Dallas**—TERMINAL BLDG., etc.—City (Airport Dpt.), City Hall, Main and Harwood Sts., (A) terminal bldg. unit, $750,000, (B) instrument runway, $1,500,000, (C) hangars, $750,000, (D) shops and misc. constr., $5,725,000, (E) fueling sys., $175,-

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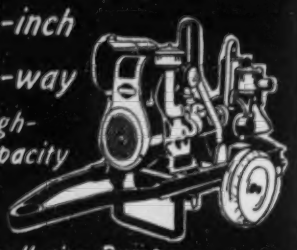

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000, (F) underground utilities, water, sewers, gas, electric cable, $250,000, (G) drainage, $200,000, (H) warehousing, storage, $400,000. Love Airfield and Airport Development. Forrest & Cotton, 802 Praetorian Bldg., and James C. Buckley, Life of America Bldg., consult. engrs. CD 10/8.

▲† Tex., Harlingen—HOSPITAL— U. S. Eng., Box 1229, Galveston, plans by Sigler, Clark & Winston, Weslaco, and Baxter & Cox, Weslaco, 100-bed hospital, Harlingen Air Force Base. $1,350,000. CD 11/4, under LB.

LATIN AMERICA

▲ Mexico, Mexico City—HEADQUARTERS—Srla. de Salubridad y Asistencia (Health & Welfare Ministry), Mexico City, plans 8 story headquarters bldg. $1,200,000.

PUBLIC BUILDINGS

▲ Calif., Downey—HOSPITAL UNITS—Los Angeles Co., Hall of Records, bond election Nov. 2, acute unit of general hospital at Rancho Los Amigos, $10,500,000; nurses home at Rancho Los Amigos, $1,400,000. CD 2/26/52.

▲ Calif., Hayward—SCHOOL—Hayward Union High School District, 22300 Foothill Blvd., plans by Anderson & Simonds, 2800 Park Blvd., Oakland, high school, Redwood Rd. and Santa Maria Ave., Castro Valley. $2,000,000.

▲ Calif., Inglewood—SCHOOLS—Centinela Valley Union High School District, 231 S. Grevillea St., voted $4,000,000 bonds, schools. CD 1/5.

▲ Calif., Vacaville—RECEPTION, etc.—State Div. Architecture, P. Wks. Bldg., Sacramento, reception and guidance center at California Medical Facility, near here. $3,695,500.

▲ Idaho, Moscow—DORMITORIES—University of Idaho, Moscow, dormitories, $12,000,000. CD 5/4/50.

▲ Mich., Dearborn—CITY HALL—City, Mayor Orville L. Hubbard, 13615 Michigan Ave., 7 story, brick, steel, stone city hall. $2,000,000.

▲ Neb., Beatrice—STEAM POWER PLANT—Nebraska Public Power System, 2416 14 St., Columbus, steam power plant. $17,600,000. Sargent & Lundy, 140 S. Dearborn St., Chicago 3, Ill. consult. engrs. CD 3/5.

▲ Nev., Reno—SCHOOLS—School Dist. No. 10, 139 W. 6 St., voted $3,000,000 bonds, school constr., addns. CD 3/12/46.

▲ N. Y., Brooklyn—HOUSING—New York City Housing Auth., 63 Park Row, New York, Zone 36, Bushwick Houses for 1,200 families, on site bounded by Bushwick and Flushing Aves., Siegel and Humboldt Sts. $15,000,000. CD 3/18/48.

▲ Pa., Butler—HIGH SCHOOL—Butler Area Joint School Dist., Butler, plans by Howard & Murphy, Butler Co. Natl. Bank Bldg., Senior High School, Rte. 422 at Fairgrounds, Butler Twp., near here. $4,000,000.

▲ Pa., Phila.—HOUSING—Phila. Housing Auth., 42 S. 15 St., plans by Howell Lewis Shay, Packard Bldg., North Allen Housing Development, 10 and Poplar Sts. $3,000,000. Keast & Hood, 2031 Chestnut St., consult. engrs. CD 2/5/53.

▲ Tex., Angleton—PRISON FARM—State Prison Bd. c/o State Admin. Bldg., Austin, 1,000-man individual cell block $3,500,000; remodeling some existing dining halls into dormitories, $750,000; constr. frame type dining hall units, $450,000, Eastham Prison Farm. CD 7/18/51.

▲ Va., Norfolk—CIVIC CENTER—City, City Hall, Norfolk, preliminary surveys by Skidmore, Owings & Merrill, 575 Madison Ave., New York, N. Y., and Hayes, Seay, Mattern & Mattern, 163 W. Olney Rd., Norfolk, consult. engrs.-archts., for determination of site for civic center. $4,000,000. CD 1/28/53.

▲ Wash., Pullman—DORMITORY—Washington State College, Pullman, plans by V. N. Jones, Republic Bldg., Seattle, Zone 1, enlarging dormitory to house another 250 students and build new men's dormitory group to house 400 students. $2,000,000. CD 5/28/49.

▲ Wash., Seattle—SCHOOLS, etc.—School District No. 1, 815 4 Ave. N., voted $10,000,000 bonds incl. high school in southwest Seattle, $2,750,000; Junior High School $2,500,000; 2 elementary schools, $675,000 each; warehouse, $400,000. CD 1/12.

▲ Wash., Tacoma—SCHOOL—School District No. 10, 601 S. 10 St., defeated bonds, high school in West End, $2,000,000, Lea, Pearson & Richards, Tacoma Bldg., Tacoma, archts., CD 12/30; defeated bonds, South End Junior High School adjacent to Harman Playfield, S. 83 and J Sts., $800,000, R. B. Price & M. W. Perrow, 2907 A St., Tacoma, archts., CD 6/19.

▲ Wash., Vancouver—HIGH SCHOOL—School Bd. Vancouver, voted bonds, high school $2,000,000. Stewart & Richardson, Central Bldg., Vancouver, archts. CD 8/7.

▲ Wis., Eau Claire—SCHOOL—Bd. Educ., 122 Mappa St., plans by E. F. Klinger & Assocs., archts. and engrs., 121½ W. Grand Ave., 1 and 2 story, part bsmt., 225,700 sq. ft. Senior High School $2,600,000.

▲ Ont., Toronto—HOUSING—York Twp., H. A. Hall, clk., 2700 Eglinton Ave. W., low-rental apartments in Township area, incl. 500 suites in building at least 3 story, bsmnt. each. Jasper Park area, $3,000,000. CD 11/27/51.

COMMERCIAL BUILDINGS

▲ Calif., Los Angeles—CHURCH—The World Church, Inc., Lake St. and Beverly Blvd., plans by Norman B. Entwistle, 56 N. Hill Ave., Pasadena, 270,000 sq. ft. masonry church. $3,000,000.

▲ Conn., Milford—SHOPPING CENTER—Mariani Constr. Co., 222 Forbes Ave., New Haven, 2 story shopping center with 60 stores on 94-acre tract on south side of Boston Post Road, to be called Bridge-Haven. $15,000,000. Alfred Kahrle, 21 Ellsworth Rd., West Hartford, consult. engr.

▲ D. C., Wash.—HOUSING, etc.—William Zeckendorf & Webb & Knapp, 383 Madison Ave., New York, N. Y., signed an agreement with the Washington Redevelopment Land Agency to make a study on redeveloping 348 acre slum area, including construction of housing, plaza shops, office buildings, community buildings, wharves on Washington Channel and other improvements. This project is not in the ENR backlog of proposed work. $500,000,000.

▲ Ill., Niles—HIGH SCHOOL, etc.—Congregation of Holy Cross, Notre Dame University, South Bend, Ind., plans by Edo Bello, 8 S. Dearborn St., Chicago, Zone 3, 2 story 150x150 ft. high school, 2 story gymnasium, and 2 story chapel, Dempster Rd. near Milwaukee Ave. $2,000,000.

▲ Miss., Vicksburg—HOSPITAL—Mercy Hospital, 900 Crawford St., plans by Raymond Birchett, 2914 N. State St., Jackson, hospital, $3,500,000. CD 8/11/50.

▲ N. Y., Briarwood—APARTMENT—Briarwood No. 3 Corp., c/o Seelig & Finkelstein, archts., 153 Pierrepont St., Brooklyn, Zone 2, 6 story apartment for 281 families, Main St. and 84 Ave. $2,107,500.

▲ N. Y., Corona—APARTMENTS—Fred C. Trump, 89-31, 161 St., Jamaica, plans by Seelig & Finkelstein, 153 Pierrepont St., Brooklyn, Zone 2, three 6 story apartments for 1,080 families, 33 Ave. from 90th to 93 Sts. $8,100,000.

▲ N. Y., New York—APARTMENT—John M. Kokkins & Stephen C. Lyras, 660 Madison Ave., Zone 24, plans by Kokkins & Lyras, c/o owner, apartment, 404-420 E. 53 St. and 399-423 E. 52 St. $4,000,000. CD 1/26.

▲ N. Y., New York—APARTMENTS—Pumia & Marx, 16 Court St., Brooklyn, two 14 story apartments adjoining Coliseum Bldg., between 58 and 60 Sts., $10,000,000.

▲ Alaska, Ketchikan—HOUSES—Ketchikan Pulp Co., Ketchikan, 203 houses. $2,000,000.

▲ Que., Montreal—COLLEGE EXTENSION—Bd. of Governors Corp. of Sir George Williams College, plans by Ross, Patterson, Townsend & Fish, 4115 Sherbrooke St. W., 5 story, bsmnt., 150x230 ft.x80 ft., steel, rein.-con., brick, stone college extension Drummond St. $2,000,000.

INDUSTRIAL BUILDINGS

▲ Mich., Utica—PLANT—Thompson Products, Inc., 7881 Conant St., Detroit, parts mfg. plant for aircraft and automobile industry, incl. railway siding, shipping plant, 55 acre site, Van Dyke south of 15 Mile Rd. $3,700,000.

▲ Miss., Biloxi—GENERATING PLANT—Mississippi Power Co., Hancock Bank Bldg., Gulfport, steam electric generating plant. $15,000,000.

▲ N. J., Trenton—POWER PLANT—New Jersey Power & Light Co., 9 W. Blackwell St., Dover, power plant, Hopewell Twp. $55,000,000. Gilbert Associates, Inc., 412 Washington St., Reading, Pa., consult. engr. John P. Mailler, ch. engr.

▲ N. C., Bessemer City—PLANT—Lithium Corp. of America, Inc., K. M. Leute, pres., Rand Tower, Minneapolis, Minn., plant adjacent to lithium deposits. $7,000,000.

UNCLASSIFIED

▲ Colorado—HIGHWAY TUNNEL—Colorado State Hy. Dpt., 518 State Office Bldg., Denver, highway tunnel through Continental Divide, four routes being considered; Loveland Pass; Jones Pass; Devils Thumb; and Straight Creek. $16,000,000. Mark U. Watrous, state hy. engr.

▲ Ohio—RURAL DISTRIBUTION LINES—Ohio-Midland Light & Power Co., 10 S. High St., Canal Winchester, 102 mi. electric distr. line, 7 mi. 69 KV transmission line; headquarters facilities and sys. imprvs., Franklin Co. $3,000,000.

▲ Virginia—POWER LINES, etc.—Virginia Electric & Power Co., 7th and Franklin Sts., Richmond, 110,000-volt power line connecting Suffolk and Newport News, $1,440,000; high voltage line from Portsmouth station to Oakwood sub-station, Portsmouth and vicinity, $1,440,000; 110,000-volt power line from Portsmouth power station to Suffolk, $485,000. Jack G. Holtzclaw, c/o owner, pres.

▲ Va., Langley Field—SUB-STATION—Virginia Electric & Power Co., 7th and Franklin Sts., Richmond, sub-station to serve National Advisory Committee for Aeronautics. $1,600,000. Jack G. Holtzclaw, c/o owner, pres.

▲ Va., Norfolk and Newport News—GAS MAINS—Virginia Electric & Power Co., 7th and Franklin St., Richmond, gas mains exten. to serve new customers and other imprvs. to gas sys. $1,195,000. Jack G. Holtzclaw, c/o owner, pres.

▲ Va., Petersburg—DISTR. SERVICE BLDG., POWER LINE FACILITIES—Virginia Electric & Power Co., 7th and Franklin Sts., Richmond, distr. service bldg. at Petersburg and power line facilities to serve new plant of Allied Chemical & Dye Corp. in Chesterfield Co. $3,000,000. Jack G. Holtzclaw, c/o owner, pres.

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The Contractor: The Towne Construction Co., 2502 Eighth Street, N.E., Canton, Ohio.

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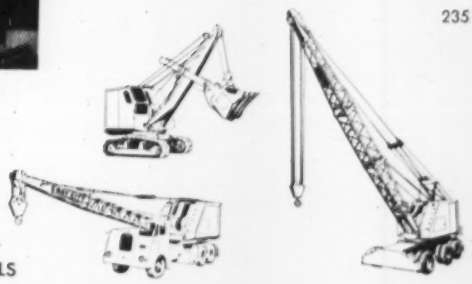

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Ottumwa, Iowa
Morgan-Gelatt and Associates, Architects
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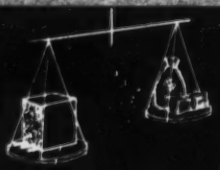

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Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

BIDS ASKED—BUILDINGS

▲ **Conn., Stratford**—PLANT—B.A. 4/5—Sikorsky Aircraft Div., United Aircraft Corp., South Ave., Bridgeport, general contract 600,000 sq. ft., bricq, masonry Helicopter Plant, Osonoque Section, $17,500,000. Fairbrother & Miehls, archts., and Albert Kahn Associated Architects & Engineers, Inc., consult. archt., both at 345 New Center Bldg., Detroit, Mich. CD 11/18.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Arthur Venneri Co.**, 300 North Ave. E., Westfield, N. J., LB $3,280,000, Schedule 1; LB, $3,276,500, Schedule 2; LB $3,265,000, Schedule 3; LB $3,077,000, Schedule 4, for cantilever hangar, Air Force Base, ENG-19-016-54-69, PORTSMOUTH, N. H. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. Bids Mar. 19. CD 2/25.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Central Maine Power Co.**, 9 Green St., Augusta, Me., has not awarded contract for steam power plant Birch Point-Cousins Island, YARMOUTH, ME. Est. $19,000,000. (Correction—status). CD 3/8, under CA.

▲**Aberthaw Co.**, 80 Federal St., Boston, Mass. CA Est. $3,000,000. BUILDING, Fairbanks Park, DEDHAM, MASS. Rust Craft Publishers, 1000 Washington St., Boston, Mass. Graham, Anderson, Probst & White, Inc., 80 E. Jackson St., Chicago, Ill., archt. CD 11/30/53.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

April 13 Maryland April 15 New Jersey, Pennsylvania

STREETS AND ROADS

April 6 Maryland April 15 Pennsylvania

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **NEW YORK**—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany. **D. W. Winkelman Co., Inc.**, Heffernan Bldg., Syracuse, N. Y. LB $2,045,440, est. $2,602,000, 4.12 mi. Lake Onondaga West Shore Development-Northwest Arterial Connection, Baldwinsville-State Fair, S.H. 8496, Contr. R. C. 54-49. S.H. 54-5, Onondaga Co. Bids Mar. 18. CD 3/10.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Indian Head Estates Homes**, c/o A. H. Salkowitz, archt., 37-60 82 St., Jackson Heights, N. Y. Owner Builds. $2,000,000. 200 HOUSES, 45-acre tract, KINGS PARK, N. Y.

▲ **Caristo Constr. Co.**, 26 Court St., Brooklyn 2, N. Y. CA. $4,500,000. WAREHOUSE and OFFICE, 7-acre tract, W. 225 St., near Broadway, NEW YORK, N. Y. Seeman Bros. Inc., 121 Hudson St., New York 13, N. Y. CD 12/23.

▲ **1025 Fifth Ave. Realty Co.**, 4 E. 46 St., New York 17, N. Y. Owner Builds. $5,000,000. APARTMENT, 1025 Fifth Ave. and 3-15 E. 83 St., NEW YORK, N. Y. CD 11/19.

▲ **Paul Axelrod & Jack Lazar**, c/o Herman York, archt., 90-04 161 St., Jamaica, N. Y. Owner Builds. $4,000,000. 376 HOUSES, 100-acre tract, Rte. 146, SCHENECTADY, N. Y.

▲ **Syosset Estate Homes**, c/o Alwin Cassens, Jr., archt., 145 S. Franklin Ave., Valley Stream, N. Y. Owner Builds. $2,500,000. 150 HOUSES, 35-acre tract on south side of Jericho Turnpike, SYOSSET, N. Y.

▲ **Ernest Di Sabatino & Sons**, 82601 West Fourth St., Wilmington, Del., CA, $1,899,000. covered WAREHOUSE and other work, WILMINGTON, DEL. Bd. Harbor Comrs., Marine Terminal, Wilmington, Del. Bids Mar. 16. CD 2/16.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

April 9 Kentucky April 20 Florida

STREETS AND ROADS

April 9 Kentucky April 14 Louisiana

BIDS ASKED—BUILDINGS

▲ **Fla., Fort Lauderdale**—HOSPITAL—B.A. 4/12—Diocese of St. Augustine, St. Augustine, hospital. $3,000,000. Steward & Skinner, 223 S.E. 1 St., Miami, archts.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Virginia Eng. Co., Inc.**, 29th St. at James River, Newport News, Va., CA $1,817,000. ADMINISTRATION-CLASSROOM-LIBRARY bldg., Norfolk Div., NORFOLK, VA. Virginia State College, Petersburg, Va. Bids Jan. 14. CD 1/21, under LB.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

▲ **O., Columbus**—B.A. 4/20—City, City Hall, municipal water filtration plant. $5,500,000. CD 6/27/51

BIDS ASKED—BUILDINGS

▲ **Ill., Highland Park**—ACADEMIC, etc.—B.A. 4/20—School District No. 113, (1) academic bldg. (2) gymnasium and cafeteria (3) tunnel. $3,500,000. Loebl, Schlossman & Bennett, 430 N. Michigan St., Chicago, Zone 11, archts. CD 8/15/51.

▲ **Mich., Grand Rapids**—SHOP—Bids Asked—Fisher Body Div., General Motors Corp., General Motors Bldg., Detroit, 1 story, 260,000 sq. ft. addns. incl. steel stores, press shop, stamping facilities, etc. $2,200,000. Argonaut Realty Div., General Motors Corp., General Motors Bldg., Detroit, archt. CD 2/3.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Glencoe Homes, Inc.**, 1950 Chaucer Dr., Reading, O. Owner Builds. $7,200,000. 450 one story 27x45 ft., and 27x34 ft., bsmntless, brick, frame HOMES, on new street off Daly Rd., CINCINNATI, O. CD 1/22,

▲ **The Austin Co.**, 16112 Euclid Ave., Cleveland, O. CA. Approx. $4,000,000. 400,000 sq. ft. masonry SHOPPING CENTER and parking lot, in Lincoln Village, 4500 W. Broad St., COLUMBUS, O. Peoples Development Co., 4828 W. Broad St., Columbus, O. CD 1/26/53, under CA.

▲ **Butler Constr. Co.**, 395 Ingram Rd., Greenhills, O. Owner Builds. $2,500,000. 169, one-family 1½ story 26x40 ft. brick HOMES on new street off Ingram Ave., GREENHILLS, O. Leslie Moss, 1210 Drott Ave., Cincinnati, O., Gordon Russell Neal & Assocs., 205 E. 7th St., Cincinnati, O., engrs. Awarded Mar. 16.

▲ **E. H. More**, 134 E. St. Charles St., Villa Park, Ill. Own Forces, $4,500,000. 300 HOMES in VILLA PARK, GLEN ELLYN, DOWNERS GROVE, ILL. A. H. Nemoede, 5110 Main St., Downers Grove, Ill., archt.

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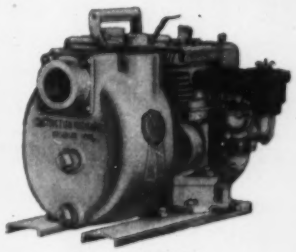

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▲ **S. N. Nielsen Co.**, 3059 Augusta Blvd., Chicago, Ill. CA, $2,000,000, two 4 story, bsmt. DORMITORIES, on Campus, EVANSTON, ILL. Northwestern University, 619 Clark St., Evanston, Ill. Bids Mar. 1, awarded Mar. 15. CD 2/26.

▲ **Jules Mirot**, 1012 S. 17 St., Maywood, Ill., Own Forces, $4,500,000, 300 HOMES in MAYWOOD, BROADVIEW, BELLWOOD, HILLSIDE, ILL.

▲ **Fither Homes, Inc.**, 188 W. Randolph St., Chicago, 1, Ill. Own Forces. $25,000,000, 2,250 HOMES, MARKHAM (Br. Harvey), ILL.

▲ **Gebhard-Berylhammer, Inc.**, 5420 W. State St., Milwaukee 8, Wis., CA, Total est. $3,500,000 general contract CLUB HOUSE, MILWAUKEE, WIS. Young Men's Christian Assn., 633 N. 4 St., Milwaukee 4, Wis. Bids Feb. 19, awarded Mar. 22. CD 3/2, under LB.

▲ **O. W. Burke Co.**, 1032 Fisher Bldg., Detroit, Mich. CA $2,655,350. general contract;

Peter Eddy & Son, 5929 Horger St., Dearborn, Mich. CA $630,000 mechanical contract for brick, concrete, steel Edsel Ford High SCHOOL, DEARBORN, MICH. City, Bd. Educ., 5757 Neckle St., Dearborn, Mich. Bids Mar. 10. CD 2/24.

▲ **Gerholz Community Homes, Inc.**, Westgate Park, Flint, Mich. Owner Builds. $11,000,000. eight hundred 1 story, brick ranch HOMES with carports 11 mi. sidewalks, curbs, gutters, 5½ mi. sewers and roads, FLINT, MICH.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
April 6 Iowa April 9 Minnesota
April 14 Texas
STREETS AND ROADS
April 6, 20, Iowa April 9 Minnesota
April 13, 14 Texas

BIDS ASKED—BUILDINGS

▲ **Minn., Cambridge**—SCHOOL, etc.—B.A. 4/15—**State**, Dpt. Admin., P. T. Peterson, dir. purchases, 19 State Capitol, St. Paul, State School and Hospital addns. $2,600,000. Plans deposit $30. Shifflet, Backstrom & Carter, 17 W. Franklin Ave., Minneapolis, archts. CD 8/18.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **City Public Service Bd.**, 201 N. St. Marys St., San Antonio, Tex. Own Forces. $2,000,000. Northside Electric Power Generating Unit (initial work for No. 2 unit); $110,000, cathodic protection for gas mains; $195,000, gas meter units, SAN ANTONIO, TEX. Grand total $2,305,000. CD 3/10.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Ralph M. Parsons Co.**, 617 S. Olive St., Los Angeles, Calif., CA. Approx. $2,750,000. sulphur recovery REFINERY unit, HOUSTON, TEX. Sinclair Refining Co., 2119 Loffland St., Houston, Tex. CD 3/8.

▲ **Foster-Wheeler Corp.**, 2118 Fannin St., Houston, Tex. CA Approx. $18,000,000. Design and construct fertilizer chemical PLANT, TIMPSON, TEX. United Chemical Co., c/o Grover Hartt, Jr., Fidelity Bldg., Dallas, Tex.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
April 14 California
STREETS AND ROADS
April 14 California

BIDS ASKED—BUILDINGS

▲ **Calif., Richmond**—SCHOOL—B.A. 4/15—Richmond Union High School District, 1108 Bissell Ave., Richmond, De Anza High School, gymnasium, etc., El Sobrante, $2,000,000. Plans deposit $75. John C. Warnecke, 507 Howard St., San Francisco, archt. CD 3/26/52.

SOON LETS CONTRACT—BUILDINGS

▲ **Oregon**—Portland General Electric Co., 621 S.W. Alder St., Portland, soon lets contract constr. Timothy Meadows Dam on Oak Grove Fork of the Upper Clackamas River, Clackamas Co. $2,200,000. CD 11/17.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Guy F. Atkinson Co., Ostrander Constr. Co., and J. A. Jones Constr. Co.**, 10 W. Orange Ave., South San Francisco, Calif. CA $2,057,080, est. $2,619,010, installing turbine parts for six power house units at McNary Dam, CIVENG-45-164-54-31, OREGON. U. S. Eng., City-County Airport, Walla Walla, Wash. Bids Feb. 11. CD 2/16, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **T G K Constr. Co., Inc.**, 2750 W. McDowell Rd., Phoenix, Ariz., LB $2,227,700, Senior HIGH SCHOOL, LAS VEGAS, NEV. Las Vegas High School Dist., 315 S. 7 St., Las Vegas, Nev. Bids Mar. 17. CD 2/4.

CANADA

BIDS ASKED—BUILDINGS

▲ **Que., Montreal**—COLLEGE EXTENSION—B.A. 4/6—Bd. Governors, Corp. of Sir George Williams, 1441 Drummond St., 5 story, bsmnt., steel, concrete college exten. south of existing bldg., Drummond St. $2,000,000. Ross, Patterson, Townsend & Fish, 4115 Sherbrooke St. W., archts. CD 3/18.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **NOVA SCOTIA**—Dpt. Transport, Dpt. Hys. & P. Wks., Halifax,

Maritime Steel & Foundries Ltd., Glasgow St., New Glasgow, N. S., CA, $5,600,000, swing bridge and steel gates Cape Porcupine-Straits of Canso. Bids Jan. 26, CD 1/15, and Bids Feb. 5, CD 1/15.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Community Enterprises Ltd.**; 610 St. James St. W., Montreal, Que., Owner Builds, $2,500,000, 200 COTTAGES and BUNGALOWS in housing program in Courtland Park Development, DORVAL, QUE. P. F. Goodfellow, 1117 St. Catherine St. W., Montreal, Que., archt.

PUERTO RICO

BUILDINGS

LOW BIDS AND CONTRACTS

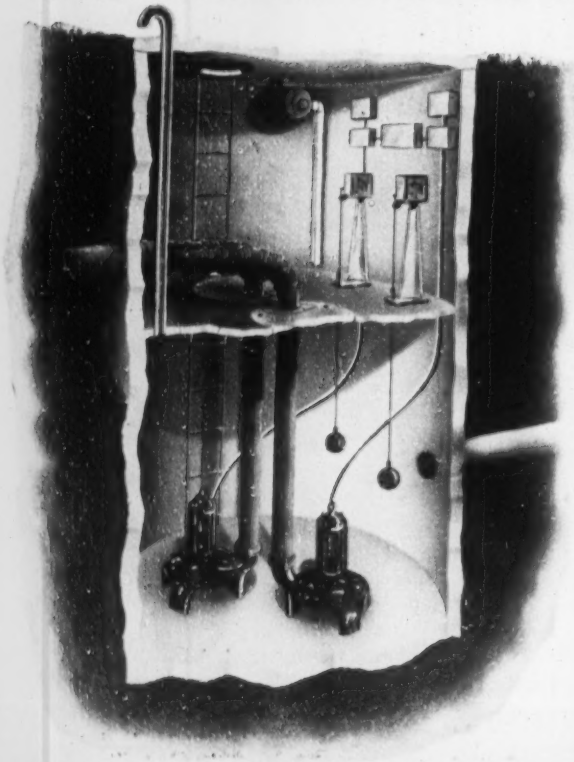
▲ **Rodriguez & Del Valle, Inc.**, San Juan, Puerto Rico. LB Approx. $1,768,000. third and last phase, Nemesio R. Canales HOUSING, 20 bldgs., 382 units and community center bldg., SAN JUAN, PUERTO RICO. Municipal Housing Auth. of Capital of Puerto Rico, San Juan, Puerto Rico. Bids Mar. 18. CD 2/24.

AMERICANS ABROAD

BIDS ASKED—BUILDINGS

▲ **Korea, Mungyong**—CEMENT PLANT—United Nations Korean Reconstruction Agency, UN Building, New York, N. Y., U.S.A. will take bids or negotiate a contract for constr. of cement plant. $5,500,000. CD 9/25.

The SUBMERSIBLE SEWAGE EJECTOR



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NEW Bulletin SE 680 B with plans and specifications for lift station installations as well as other applications will be sent upon request.

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UNIT PRICES

Water & sewer systems for growing Michigan town

Its population quadrupled since 1920 and facing court action for pollution of the Paw Paw River, Benton Township, Michigan, will award six contracts in 12 sections for construction of a water supply and distribution system and a sanitary sewer system. Total cost of the projects will be approximately $3.5 million. Engineers are R. W. Petrie and Associates, Benton Harbor, Michigan.

All materials will be furnished by the contractors. They have 270 calendar days to complete 347,800 feet of water mains, one year to complete 287,000 feet of sewer pipe.

Prevailing wage rates in the Benton Harbor area allow $1.65-$2.00 per hour to common labor, $2.75 per hour to operating engineers.

Bidders include:

Water mains—south section

1	Haines & Haines, Elkhart, Indiana	$437,674
2	Dunigan Bros., Jackson, Michigan	440,058
3	Charles F. McCurdy, Inc., Cincinnati, Ohio	473,162

Bids: 2-22-54 Items	Unit	Quantity	Unit Prices 1	2
Cast iron main, 12"	lf	4,100	$5.555	$5.44
10"	lf	19,800	4.405	4.41
8"	lf	25,350	3.535	3.71
6"	lf	60,800	2.695	2.72
4"	lf	10,400	2.135	2.11
Gate valves & boxes, 12"	ea	10	324.00	350.00
10"	ea	25	126.00	129.00
8"	ea	37	85.60	83.50
6"	ea	117	61.00	65.00
4"	ea	51	43.00	48.00
Fire hyds, valves & boxes	ea	141	200.00	190.00
Stl encasement of CI main, 24" stl, 12" CI, at M-139	ft	40	24.00	11.00
20" stl, 10" CI, at M-139	ft	40	22.00	10.50
18" stl, 8" CI, at M-139	ft	80	20.00	10.00
16" stl, 6" CI, at M-139	ft	40	19.00	9.50
14" stl, 4" CI, at M-139	ft	40	18.00	9.25

Water mains—east section

1	Dunigan Brothers, Jackson, Michigan	$679,063
2	Haines & Haines, Elkhart, Indiana	714,716
3	Chas. F. McCurdy, Inc., Cincinnati, Ohio	730,752

Items	Unit	Quantity	1	2
Cast iron main, 16"	lf	24,600	$7.72	$8.485
12"	lf	1,050	5.43	5.615
10"	lf	11,650	4.38	4.465
8"	lf	51,000	3.60	3.595
6"	lf	59,800	2.67	2.755
4"	lf	3,850	2.11	2.195
CI main river crossing, 8"	lf	216	18.53	46.15
Gate valves & boxes, 16"	ea	25	530.00	495.00
12"	ea	2	350.00	324.00
10"	ea	22	129.00	126.00
8"	ea	92	83.50	85.60
6"	ea	137	65.00	61.00
4"	ea	24	48.00	43.00
Fire hyds, valves & boxes	ea	263	190.00	200.00
36" RC pipe encasement, 16" CI main under RR	ft	32	19.50	40.00
18" stl encasement of 8" CI main at hwy & RR	ft	293	10.00	20.00
16" stl encasement of 6" CI main under US 12	ft	40	9.50	19.00

Water mains—Euclid center section

1	Haines & Haines, Elkhart, Indiana	$133,103
2	Lee Hazell, Lake Odessa, Michigan	138,884
3	Hively Excavating, Muskogon, Michigan	141,613

Items	Unit	Quantity	1	2
Cast iron main, 16"	lf	1,800	$8.38	$8.07
10"	lf	2,700	4.36	4.53
8"	lf	6,100	3.49	3.55
6"	lf	22,500	2.65	2.76
4"	lf	4,300	2.09	2.14
Gate valve & basin, 16"	ea	1	495.00	577.00
Gate valve & boxes, 10"	ea	8	126.00	145.00
8"	ea	16	85.60	95.75
6"	ea	33	61.00	72.00
4"	ea	29	43.00	52.25

Bids: 2-22-54 Items	Unit	Quantity	Unit Prices 1	2
Fire hyds, valves & boxes	ea	42	200.00	240.00
18" stl encasement of 8" CI main under US 12	ft	40	19.00	20.00
16" stl encasement of 6" CI main under US 12	ft	80	18.00	20.00

Water mains—north section

1	Haines & Haines, Elkhart, Indiana	$139,326
2	D. Lapham, Shelbyville, Michigan	148,856
3	Charles M Torson, Kansas City, Missouri	153,784

Items	Unit	Quantity	1	2
Cast iron main, 8"	lf	23,000	$3.525	$3.75
6"	lf	9,200	2.685	2.81
4"	lf	5,700	2.125	2.19
Gate valves & boxes, 8"	ea	33	85.60	96.00
6"	ea	18	61.00	72.00
4"	ea	19	42.75	53.00
Fire Hyds, valves & boxes	ea	55	204.75	240.00
18" stl encasement of 8" CI main under US 31	ft	120	20.00	20.00
16" stl encasement of 6" CI main under US-31	ft	160	19.00	20.00

Deep wells

1	Layne-Northern Co., Inc., Mishawaka, Indiana	$34,750

Items	Unit	Quantity	1	2
Test wells, 3½" or more	ft	300	$4.75	
Final well, 34" GP, no 1	ft	125	63.80	
no 2	ft	110	72.50	
no 3	ft	120	66.48	
no 4	ft	140	50.00	
Pump test	hr	120	20.00	

Elevated storage tanks

1	Pittsburgh-Des Moines Steel Co., Pittsburgh, Pennsylvania	$189,700
2	Chicago Bridge & Iron Co., Detroit, Michigan	202,480
3	W. E. Caldwell Co., Louisville, Kentucky	209,900

Bids: 2-22-54 Items	Unit	Quantity	Unit Prices 1	2
Napier Avenue tank	ls	1	$73,900	$79,700
Crystal avenue tank	ls	1	73,900	79,800
N. Shore Drive tank	ls	1	41,900	42,980

Sewage lift & meter stations

1	Pearson Const Co., Benton Harbor, Michigan	$167,400
2	Dale Lapham, Charlotte, Michigan	192,439
3	H. W. Hunter, Plymouth, Indiana	267,725

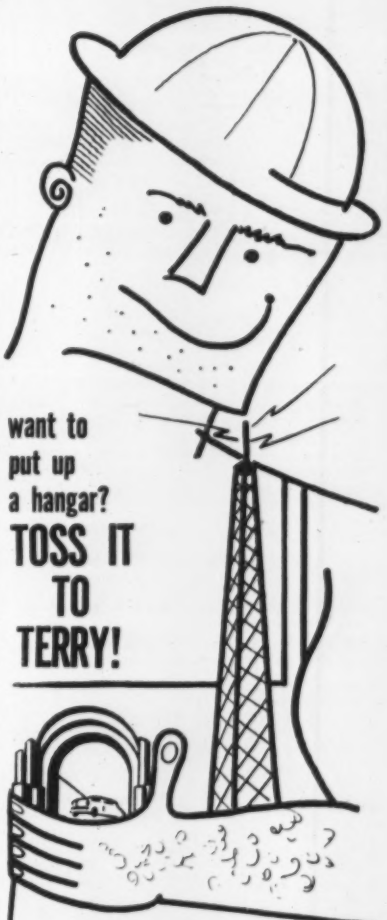
Bids: 2-22-54 Items	Unit	Quantity	Unit Prices 1	2
Woodland Ave meter station	ls	1	$8,300	$18,000
Empire Ave meter station	ls	1	13,700	18,620
M-139 lift & meter station	ls	1	14,800	18,624
North Shore lift & meter station	ls	1	23,600	20,870
Euclid @ Territorial lift station	ls	1	20,300	24,785
Maynard @ Reeder lift sta	ls	1	17,700	23,025
Lake Shore Drive lift sta	ls	1	19,200	15,120
U. S. 31 @ Collins lift sta	ls	1	13,200	15,210
US 12 @ Euclid lift sta	ls	1	17,000	23,025
Grand Blvd @ Glenview lift station	ls	1	19,000	15,160

Sanitary sewer system—south section

1	Otis Klett & Barker Bros., Hartford, Michigan	$598,702
2	Shamrock Engineering Co., Gary, Indiana	674,909
3	Santucci Const. Co., Skokie, Illinois	787,072

Items	Unit	Quantity	1	2
Clay tile, 8", C-13	lf	34,471	$3.25	$2.88
10", C-13	lf	43,206	3.60	3.97
Concrete tile, 12", C-14	lf	9,298	3.56	4.10
12", C-75	lf	8,739	4.13	9.90
15", C-14	lf	5,258	4.32	6.97
15", C-75	lf	3,022	4.83	10.97
18", C-14	lf	2,477	4.93	8.90
21", C-14	lf	6,263	9.88	10.26
Clay tile wyes, 8", C-13	ea	466	15.60	1.60
10", C-13	ea	483	20.40	2.00
Conc tile wyes, 12", C-14	ea	54	13.74	8.00
12", C-75	ea	61	18.87	10.00
15", C-14	ea	35	18.33	8.00
15", C-75	ea	19	22.92	10.00
Force main, 8"	lf	1,320	4.54	4.80
Manholes, to 12' deep	ea	406	185.00	210.00
MH footage over 12'	vf	176	120.00	14.00
Drop pipe assemblies	ea	13	12.00	60.00
Service riser pipes, 6"	ea	525	3.55	8.00
Highway crossings, 8"&10"	ea	3	1,600	800.00
15"	ea	1	2,700	1,000
Empire Ave storm flume	ls	1	800.00	2,200
Hog Creek culvert	ls	1	3,000	1,000
May Street culvert	ls	1	1,000	1,500
Concrete cradle	cy	400	60.00	20.00
Sheeting left in place	mfbm	50	150.00	100.00

(Continued on page 72)



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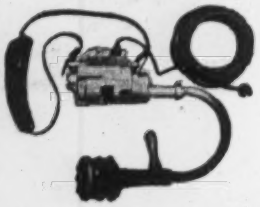

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3233 W. Grand Ave., Chicago 51, Illinois

UNIT PRICES

Continued from page 71

Sanitary sewer system—south section

1	Boncar Const. Co., Chicago, Illinois	$550,664
2	Santucci Const. Co., Stokie, Illinois	662,242
3	R. D. Baker Contr., Inc., Detroit, Michigan	742,608

Bids: 2-17-54 Item	Unit	Quantity	Unit Prices 1	2
Clay tile, 8", C-13	lf	57,669	$3.27	$3.60
10", C-13	lf	16,435	4.67	4.60
Concrete tile, 12", C-14	lf	8,748	4.26	4.80
12", C-75	lf	2,207	6.96	11.00
15", C-14	lf	6,880	5.10	7.80
15", C-75	lf	2,634	7.20	14.00
18", C-14	lf	1,553	5.75	14.00
18", C-75	lf	2,412	7.97	14.40
21", C-75	lf	928	8.78	15.00
Clay tile wyes, 8", C-13	ea	892	6.58	6.00
10", C-13	ea	128	9.85	9.00
Conc tile wyes, 12", C-14	ea	63	12.90	8.00
12", C-75	ea	12	21.45	14.00
15", C-14	ea	77	20.50	12.00
15", C-75	ea	31	28.20	17.00
18", C-14	ea	30	28.20	16.00
18" C-75	ea	54	39.15	24.00
21", C-75	ea	5	52.05	28.00
Force main, 6"	lf	1,050	4.50	4.30
Manholes, to 12' deep	ea	377	253.00	240.00
MH footage over 12'	vf	139	35.00	28.00
Drop pipe assemblies	ea	12	100.00	80.00
Service riser pipes, 6"	ea	490	24.00	6.00
Highway crossings, 8", 10", 12"	ea	4	900.00	5,000
18"	ea	1	1,200	10,000
Concrete cradle	yd	200	25.00	3,500
Sheeting left in place	mfbm	10	75.00	150.00

Sanitary sewer system—Euclid center

1	Otis Klett & E. Harris, Hartford, Michigan	$182,501
2	Lee Hazel & Dean Lapham, Lake Odessa, Michigan	186,502
3	Torson Const. Co., Kansas City, Missouri	177,468

Clay tile, 8", C-13	lf	29,881	$3.00	$2.90
10", C-13	lf	6,126	3.27	3.22
Concrete tile, 12", C-14	lf	821	3.16	6.49
12", C-75	lf	1,153	3.73	6.43
Clay tile wyes, 8", C-13	ea	434	9.08	6.50
10", C-13	ea	102	21.48	9.70
Concrete tile wyes, 12", C-14	ea	10	21.48	12.20
12", C-75	ea	18	21.48	14.30
Cast iron sewer, 8"	lf	12	10.00	12.00
12"	lf	12	12.00	15.00
Force main, 6"	lf	60	5.00	4.64
8"	lf	1,850	4.30	4.85
Manholes, to 12' deep	ea	137	190.00	200.00
MH footage over 12'	vf	41	20.00	40.00
Drop pipe assemblies	lf	10	12.00	75.00
Service riser pipes, 6"	ea	220	3.45	5.00
Highway crossings, 8"&10"	ea	2	500.00	800.00
Concrete cradle	cy	20	60.00	25.00
Sheeting left in place	mfbm	5	150.00	125.00

Sanitary sewer system—north section

1	Thumm-A & E General Constr., Chicago, Illinois	$195,642
2	Torson Const. Co., Kansas City, Missouri	213,025
3	R. D. Baker Contr., Inc., Detroit, Michigan	252,887

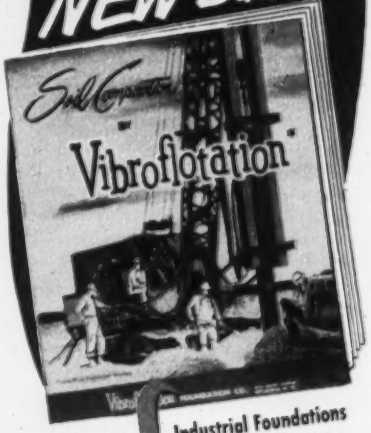
Clay tile, 8", C-13	lf	27,424	$3.13	$3.00
Corr met pipe, 8"	lf	157	10.00	5.00
Clay tile, 10", C-13	lf	6,703	4.18	5.00
Corr met pipe, 10"	lf	478	12.00	6.00
Concrete tile, 12", C-14	lf	1,480	4.29	12.00
15", C-14	lf	220	3.87	8.00
Clay tile wyes, 8", C-13	ea	245	6.25	3.50
10", C-13	ea	33	9.25	5.00
Conc tile wyes, 12", C-14	ea	1	13.25	7.00
Force main, 6"	lf	2,030	4.00	4.00
8"	lf	1,480	6.00	4.75
River crossing, 8"	lf	340	15.00	30.00
Manholes, to 12' deep	ea	148	225.00	230.00
MH footage over 12'	vf	9	40.00	60.00
Drop pipe assemblies	ea	2	80.00	100.00
Service riser pipes, 6"	ea	45	14.00	20.00
Highway crossings, 8"&10"	ea	3	750.00	1,200
Railroad crossing	ea	1	3,200	3,000
Concrete cradle	cy	100	30.00	40.00
Sheeting left in place	mfbm	10	50.00	150.00

Pump houses, booster station & elevated storage tank foundations

1	Pearson Const. Co., Inc., Benton Harbor, Michigan	$104,500
2	Dale S. Lapham, Charlotte, Michigan	119,150

Pump house no. 1	ls	1	$15,300	$16,850
no. 2	ls	1	15,300	16,850
no. 3	ls	1	15,100	16,850
no. 4	ls	1	13,100	14,250
Booster station	ls	1	14,700	18,900
Storage tank fndn, Napier Avenue	ls	1	10,700	12,400
Crystal Avenue	ls	1	10,500	12,400
N. Shore Drive	ls	1	5,800	6,750
Telemetering pump controls	ls	1	4,000	3,900

Before you plan Foundations send for this **NEW Bulletin**



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v6

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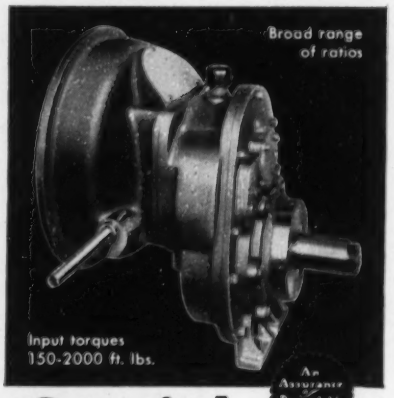

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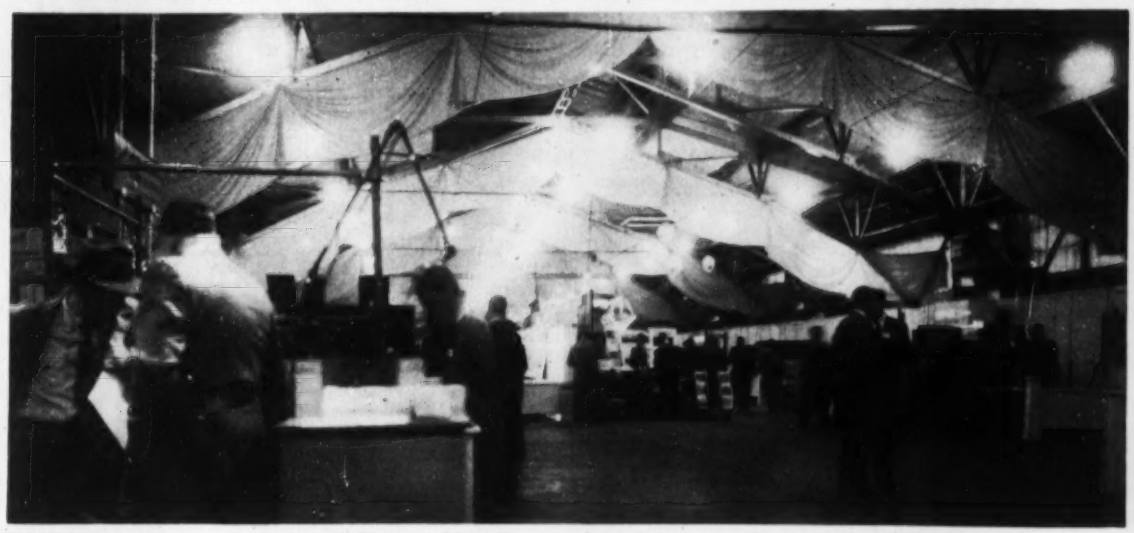

EXHIBITS dotted the wide expanse of Chicago's Navy Pier as makers of concrete materials and equipment showed their wares to contractors, engineers, and architects at the first Midwest Concrete Exposition.

Show 'em—then sell 'em

Show a contractor, an engineer, or an architect how he can cut costs and speed construction, and you've got a fascinated audience. That's what happened last month on Chicago's rambling Navy Pier, when the Concrete Contractors Assn. of Greater Chicago sponsored a three-day show of the latest materials, equipment, and techniques in concrete construction (Pictures).

There were no technical papers, no entertainment. The 80 exhibitors at this Midwest Concrete Exposition had the field to themselves, and they drew about 4,000 interested visitors from all over the Midwest. Rentals for exhibition space weren't high—just enough to let the Association break even.

Engineers and architects learned about new applications of concrete and concrete products in the building field, especially in prestressing, precasting, and air-entrainment, and such new methods as tilt-up construction. Movies showed technical details. There were new types of construction equipment on display, including such items as air-conditioned trailers for construction crews, power trowels, and concrete inserts and anchoring devices.

(*Continued on page 74*)

FLY ASH for better concrete is pushed by C. J. Cain, president of Chicago Fly Ash Co., at his firm's booth.

PRESTRESSED CONCRETE POTENTIALS are outlined to an attentive group by J. J. Rohlf, of the Portland Cement Assn. Said one visitor from Milwaukee: "We're all getting a liberal education."

POWER TOOLS will save time and money, salesman E. P. Lachapelle tells Chicago contractor, M. R. Hagaman.

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There were additives to make concrete more durable and more easily worked, precast roof systems, colored concrete, prestressed beams and tanks, and many other materials and methods used in modern concrete construction.

Treasury borrowing leaves clear track for construction

The U.S. Treasury is definitely not interested right now in getting in the way of borrowers who want long-term money to finance construction. That's the conclusion you can draw from the Treasury's recent decision to borrow in the form of short-term securities which will mature in June.

Though there had been plenty of rumors in Wall Street last month that the Treasury was going to announce a long-term bond issue to raise new money, things turned out differently. It will sell $1.5 billion of tax anticipation bills—generally called "tabs"—which will come due June 24. Buyers of these securities can use them to pay their June 15 income tax installments or can get cash at maturity.

When the "tabs" come due in June, the Treasury will have to make another decision about its borrowing of new funds. It expects to raise about $2 billion then. You can be sure that the fiscal experts at the Treasury are well aware that if they decide to sell a long-term bond issue then they will be competing for funds with business firms, prospective home owners, and local governments who borrow long-term.

Meanwhile, creditworthy contractors who need money for construction loans should have an easy time during the next few months. Commercial banks are looking around for likely borrowers. Just recently, for instance, banks in the big financial centers reduced the "prime rate" which they charge top-grade customers from 3¼% down to 3%.

Business briefs . . .

• **Maine Turnpike Authority** reports that net income for the year ended in February is up 9.6% over the preceding annual period. It also reports that contractors' bids on most of the contracts let for its latest construction projects are somewhat below engineers' estimates.

• **Home remodeling** and improvements will total at least a record $6 billion or $7 billion this year, according to an estimate by the National Established Roofing, Siding and Insulating Contractors Assn.

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The Mayo Grouter quickly and easily places low-pressure grout in tunnels, mines, shafts, foundations, and subgrades. It also may be used to inject sodium silicate emulsions for stabilizing caving or running ground.

This versatile piece of equipment can readily be converted to a "Pea Shooter" for shooting Pea or "Bird's Eye" gravel back of liner plates and backpacking outside lagging plates.

Write for Free Catalog 13 for full details and specifications.

MAYO
TUNNEL AND MINE EQUIPMENT
LANCASTER, PA.

Activity This Week

As reported to ENR
(In millions of dollars)

Amount of contracts let

	This Week	Cumulative 13 wks 1954	1953	% chge
Federal	$16.9	$223.6	$430.8	−48
State and municipal	113.7	1,036.8	1,271.9	−18
Total pub.	130.6	1,260.4	1,702.7	−26
Total priv.	198.9	1,535.7	2,682.9	−43
U. S. total	**$329.5**	**$2,796.1**	**$4,385.6**	**−36**
Contracts by type of work				
Waterworks	$2.3	$46.9	$66.8	−30
Sewerage	5.7	77.2	96.8	−20
Bridges	10.1	109.5	159.7	−31
Highways	57.1	320.6	377.2	−15
Earthwork, waterways	3.4	70.3	95.3	−26
Buildings:				
Public, excl. hsg.	30.4	416.2	455.5	−9
Housg., pub.	7.1	47.3	214.6	−78
Housg., priv.	102.1	826.6	1,128.9	−27
Commercial	20.2	267.9	261.6	+2
Industrial	72.9	389.2	1,086.9	−64
Unclassified	18.2	224.4	442.3	−49
Total	**$329.5**	**$2,796.1**	**$4,385.6**	**−36**

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

New capital for construction
(millions of dollars)

	Week of Apr. 1 1954	Cumulative 12 Wks 1954	% chge 1953-54
Corporate securities	$47.1	$757.9	−4
State and municipal:			
Excluding housing	93.6	940.2	−3
Housing		32.9	−76
Federal loans	2.7	26.8	−17
Federal aid	...	...	...
Total non-federal	**$143.4**	**$1,757.8**	**−6**
Federal approp.:			
In U. S.	....	...	...
Outside U. S.	...	...	...
Total new capital	**$143.4**	**$1,757.8**	**−6**

ENR indexes		Base years = 100 1913	1926	1949
Constr. cost	Mar '54	613.99	295.14	128.71
	Feb '54	614.71	295.49	128.86
Bldg. cost	Mar '54	437.17	236.32	124.27
	Feb '54	437.55	236.53	124.38
Volume	Feb '54	345	140	100
	Jan '54	338	137	98

DAM REPAIRED WITH "GUNITE"

The two photographs show the Bulls Bridge Dam of the Connecticut Light and Power Company, which is one of many dams we have repaired for this company.

The upper view shows the work in progress, and gives some idea of the condition of this structure before repairs were made. The lower view is of the completed job.

After chipping out the loose and disintegrated concrete and sandblasting the entire area, heavy reinforcing mesh was placed over the surface of the old concrete and "GUNITE" applied two inches thick, plus the material required for filling deeply eroded portions.

Our 72-page bulletin A-2400 describes scores of similar "Gunite" jobs.

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GENERAL OFFICES – ALLENTOWN, PA., U. S. A.
MANUFACTURERS OF THE CEMENT GUN

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"A STRONG STEP TO SAFETY"

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OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $1.50 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record, 330 West 42nd Street, New York 36, N. Y.

Bids: April 8, 1954

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, Public Buildings Law, and special provisions for projects financed with Federal Aid funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on the 8th day of April 1954, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 1				
		G. L. Nickerson, District Engineer, 353 Broadway, Albany, N. Y.				
Warren	FARC 54-47	The Glen–Wevertown, SH 1963 Project F-757(2)	5.65	Asp. Conc. Opt.	$13,000 Plans $10	$222,000
		DISTRICT No. 2				
		L. Ketchum, District Engineer, 109 No. Genesee Street, Utica, N. Y.				
Madison	FARC 54-46	Furmans Mills–Hubbardsville, SH 8297 Hubbardsville–North Brookfield, SH 8203 Project F-456(6), F-277(2)	3.66	Asp. Conc. Opt.	$14,000 Plans $10	245,000
Oneida	FARC 54-16	Kirkland–Rome, SH 8246 Project F-415(9)	2.85	Asp. Conc. Opt.	$13,000 Plans $10	232,000
		DISTRICT No. 6				
		J. H. Thomas, District Engineer, 30 West Main Street, Hornell, N. Y.				
Chemung	FARC 54-20	Alpine–Cayuta Pt. 2, Cayuta–Swartwood, Pts. 1 and 2, SH 8242 Erin–Van Etten–Spencer Pt. 1, SH 1311 Project F-400(4)	1.21	Asp. Conc. Opt.	$7,000 Plans $10	125,000
Steuben	FARC 54-22	Cohocton–Wayland Pt. 1, SH 1104 Project F-134(3)	2.87	Asp. Conc. Opt.	$13,000 Plans $10	221,000
		DISTRICT No. 7				
		R. W. Sweet, District Engineer, 444 Van Duzee St., Watertown, N. Y.				
St. Lawrence	FARC 54-21	Madrid–Potsdam, SH 9026 Project S-434(1)	5.11	Asp. Conc. Opt.	$10,500 Plans $10	188,000
St. Lawrence	FARC 54-34	Harrisville–Fine Pts. 1&3, SH 8337 Proj. F-382(6)	6.48	Asp. Conc. Opt	$19,000 Plans $10	349,000
		DISTRICT No. 8				
		J. S. Bixby, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.				
Dutchess	FARC 54-36	Red Hook–Rhinebeck SH 5092 Project F-322(11)	2.85	Asp. Conc. Opt.	$12,000 Plans $10	201,000
Dutchess and Putnam	FARC 54-45	Terrys Corners–Ludingtonville–Dutchess Co. Line, SH 8347 Putnam County Line–Stormville Pt. 1, SH 8366 Project F-501(6), F-468(11)	2.92	Asp. Conc. Opt.	9,000 Plans $10	158,000
		DISTRICT No. 9				
		F. W. Donovan, District Engineer, 71 Frederick St., Binghamton, N. Y.				
Broome	FARC 54-25	Chenango Bridge–Kattelville, SH 1487 Project F-379(8)	1.09	Asp. Conc. Opt.	$10,000 Plans $10	177,000
Broome	FARC 54-26	Castle Creek–Whitney Point, SH 1450 Project F-717(3)	0.95	Asp. Conc. Opt.	$9,000 Plans $10	167,000
Chenango	FARC 54-27	Smyrna Village, SH 809; Otselic–Smyrna Pts. 2A & 1, SH 599-1473; Smyrna–Sherburne, Pt. 2, SH 9097; Otselic–South Otselic Pt. 1, SH 664 Project F-782(2), S-838(3), (4)	8.11	Bit. Mac. Type 1 (Pen. Meth.)	$30,000 Plans $15	545,000
Schoharie	FARC 54-28	Cobleskill–West Richmondville, SH 5458 Project F-471(9)	3.98	Asp. Conc. Opt.	$14,000 Plans $10	239,000
		DISTRICT No. 10				
		M. E. Goul, District Engineer, Montauk Highway, Babylon, L. I., New York				
Suffolk	FARC 54-48	Cold Spring–Huntington–Fort Salonga Pt. 1, SH 1525 Main Street, Huntington, SH 9330 Project F-566(6)	0.57	Asp. Conc. Opt.	$9,000 Plans $10	157,000
Suffolk	FARC 54-38	Port Jefferson–Riverhead Pts. 1 & 2A, SH 8094-5674 Project S-430(1)	6.08	Asp. Conc. Opt.	$35,000 Plans $10	613,000
Suffolk	B.P. 54-52A	Shinnecock Inlet (West Jetty Extension)	....	Stone Jetty Extension and Erection of Light Tower	5% of Bids Plans $10	163,625
Albany, Greene, Schen., Herkimer, Madison, Mont., Oneida, Cayuga, Onon., Seneca, Gen., Monroe, Ont., Erie, Orange, Rock., Ulster	T. T. S. 54-1	New York State Thruway—Catskill, Mohawk, Ontario and Hudson Sections	....	Furnishing & Erecting Interchange Traffic Signs	$10,000 Plans $10	$200,000

Note: Plans and proposals for this contract may be obtained at our Albany and New York City offices only

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders."

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY
SUPT. OF PUBLIC WORKS

OFFICIAL PROPOSALS

Bids: April 13, 1954

Construction of Road

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Department for:

QUINTON-ELMER ROAD

Construction of Quinton-Elmer Road from Alloway to Remsterville, Alloway Township, Salem County. Federal Aid Secondary Project No. S-50(3). Length 0.988 miles. The principal items of construction are:

Estimated: Roadway Items
11,879 cu. yds. Roadway Excavation
17,467 sq. yds. 10" Gravel Base Course
1,970 tons Bituminous Concrete
2,647 lin. ft. Concrete Curb
2,292 lin. ft. Beam Guard Rail
Bridge Items
3,780 lin. ft. Untreated Timber Piles
372 cu. yds. Class "C" Concrete
20,138 lbs. Reinforcing Steel
22,548 lbs. Structural Steel

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Tuesday, April *13*, 1954, at eleven o'clock (11:00 A.M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

NOTE: The proposed project is a "Federal Aid Secondary Project" authorized by the provisions of Title 27 of the Revised Statutes of New Jersey and supplements and by P. L. 769, 81st Congress, and is to be performed in accordance with the special provisions and requirements of the Bureau of Public Roads, Department of Commerce, as outlined in the specifications, which provisions require that labor be employed from lists furnished by the State Employment Service, 168 East Broadway, Salem, New Jersey. The attention of bidders is directed to the special provisions covering subletting or assigning the contract. The minimum wage paid to all common labor employed on this contract shall be $.075 per hour. The minimum wage paid to all intermediate grade of labor employed on this contract shall be $1.00 per hour. The minimum wage paid to all skilled labor employed on this contract shall be $1.50 per hour.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, New Jersey, and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: STATE HIGHWAY DEPARTMENT
A. Lee Grover, Chief Clerk

PROCUREMENT DEPARTMENT, CITY OF Philadelphia. Sealed proposals will be received in Room 313, City Hall Annex, until 1:30 P.M. (E.D.S.T.) Tuesday, April 27, 1954 on BIDS NO. 4412 AND NO. 4413 for Department of Public Property, Engineering Branch Contracts 275-A and 275-B: FOR TRACKLAYING IN THE MARKET STREET SUBWAY EXTENSION AND THE 36TH STREET-WOODLAND AVENUE EXTENSION OF THE MARKET STREET SUBWAY-SURFACE CAR SUBWAY, and at that time will be publicly opened and read. The certified check, based on the aggregate of the two Contracts, required as a guaranty for the execution of the Contracts in the amount given in paragraph 7 of the Standard Contract Requirements of the City of Philadelphia, 1950, shall be enclosed with the Proposal. Specifications, Plans, and Pre-Qualification Questionnaire may be obtained from the Engineering Branch, Room 1325, City Hall Annex, upon making a deposit of $25.00 in cash or by certified check made payable to the City Treasurer of the City of Philadelphia, which will be refunded upon return of the documents in good condition within 10 days after the Contracts are awarded. The form of contract and the bonds may be obtained from the Law Department, Room 715, City Hall Annex. NOTICE: No bids for this work will be received unless the Qualification of Bidders Questionnaire Form furnished by the Department is filed with all questions fully answered with the Chief of the Engineering Branch, Department of Public Property, Room 1305, City Hall Annex, at least one week before the date set for opening of bids. The Procurement Commissioner reserves the right to reject any or all bids. A. ALBERT CHERASHORE, Procurement Commissioner.

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4132) will be received at Folsom, California, until April 22, 1954, for furnishing labor and materials for completion of Nimbus Powerplant, Folsom Unit, American River Division, Central Valley Project, California. Location: Approximately 15 miles northeast of Sacramento, California. Principal items are: 2,100 sq. yds. bonded concrete finish; lump sum, installing nonembedded turbine parts and testing two 9,400-horsepower hydraulic turbines; 20,000 pounds, erecting steel structures; 37,500 pounds, furnishing and installing metal pipe, valves, and fittings; lump sum, furnishing and installing heating and ventilating system; 3,300 lin. ft., furnishing and installing electrical conduit; 40,000 lin. ft., installing 600-volt electrical wires and cables; and other work. Completion time 250 days. For particulars, address Bureau of Reclamation, Folsom, California; or Building 53, Denver Federal Center, Denver, Colorado. W. A. Dexheimer, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4146) will be received at Huron, South Dakota, until April 22, 1954, for furnishing labor and materials for constructing foundations and erecting steel towers for Big Bend-Granite Falls 230-kv Transmission Line, Transmission Division, South Dakota, Missouri River Basin Project. Location: In Buffalo, Hand, Beadle, Clark, Hamlin, Codington, and Devel Counties, South Dakota, and Lac Qui Parle, Yellow Medicine, and Chippewa Counties, Minnesota. Principal items are: excavation, 44,600 cu. yds.; furnishing treated timber piles, 40 ft. and less in length, 80,000 lin. ft.; furnishing treated timber piles over 40 ft. but less than 60 ft. in length, 20,000 lin. ft.; driving treated timber piling, 87,000 lin. ft.; furnishing and handling cement, 19,000 bbls.; furnishing and placing reinforcement bars, 1,600,000 lbs.; concrete, 13,000 cu. yds.; erecting steel towers, 22,000,000 lbs.; and other work. Completion time 700 days. For particulars, address Bureau of Reclamation, Huron, South Dakota; or Building 53, Denver Federal Center, Denver, Colorado. W. A. Dexheimer, Commissioner.

Bids: April 13, 1954

Route 6 (1927) Route U. S. 46 (1953), Sec. 1-M

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Department for:

Route 6 (1927) Route U.S. 46 (1953), Section 1-M, Main Street Relocation and Resurfacing Hackensack River Bridge, in the Village of Ridgefield Park and Borough of Little Ferry, Bergen County. 0.355 miles. Federal Project No. UI-117-(5). The principal items of work are:

Estimated:
Roadway Items
12,497 cu. yds. Roadway Excavation—Earth
7,461 sq. yds. Pavement Surface Removal
8,402 sq. yds. Pavement Type MA-BC-2, 3" thick
5,588 sq. yds. Conc. Pavement Surface, Rein. 10" thick
1,588 lin. ft. Rein. Conc. Culvert Pipe, various sizes
555 lin. ft. 29"x18" C.M. Pipe Arch, Bituminous Coates
3,830 lin. ft. 9" x 20" White Conc. Vertical Curb
Bridge Items
1,133 cu. ft. Concrete Headers

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J., on Tuesday, April *13*, 1954, at eleven o'clock (11:00 A.M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

NOTE: The proposed project is a "Federal Aid Project" authorized by the provisions of Title 27 of the revised statutes of New Jersey and supplements, and by P. L. 413, 82nd Congress, and is to be performed in accordance with the special provisions and requirements of the Bureau of Public Roads, Department of Commerce, as outlined in the specifications, which provisions require that labor be employed from lists furnished by the State Employment Service, 349 State Street, Hackensack, New Jersey. The attention of bidders is directed to the special provisions covering subletting or assigning the contract. The minimum wage paid to all unskilled labor employed on this contract shall be $0.75 per hour. The minimum wage paid to all intermediate grade of labor employed on this contract shall be $1.00 per hour. The minimum wage paid to all skilled labor employed on this contract shall be $1.50 per hour.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: STATE HIGHWAY DEPARTMENT
A. Lee Grover, Chief Clerk

OFFICIAL PROPOSALS

Bids: April 27, 1954

Construction of Pump Houses

THE PORT OF NEW YORK AUTHORITY
LA GUARDIA AIRPORT
CONTRACT LGA-160.004

Sealed proposals for the construction of two storm water pumping stations at La Guardia Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, April 27, 1954, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Contract Engineer of the Authority, Room 1112. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to the Contract Engineer, who will furnish the documents.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of the documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
New York, April 1, 1954

Bids: April 20, 1954

Port Authority Bus Terminal

THE PORT OF NEW YORK AUTHORITY
INTERIOR FINISH FOR ROOM 1207
(SPORTING GOODS STORE)
CONTRACT BT-120.001

Sealed proposals for the furnishing and installation of interior finishes for Room 1207 on the Main Concourse in the Port Authority Bus Terminal will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1111, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, April 20, 1954, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Contract Engineer of the Authority, Room 1112, and copies will be furnished upon deposit of $10.00 per set. The deposit shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to the Engineer of Materials who will furnish the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than forty days after the opening of proposals. The deposit will be forfeited if the documents are not so returned within the forty days.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
New York, April 1, 1954

Bids: April 15, 1954

Commonwealth of Massachusetts

Commonwealth of Massachusetts, Metropolitan District Commission. Sealed bids or proposals will be received by the Metropolitan District Commission at its office, 20 Somerset Street, Boston, until 1:00 P.M. Thursday, April 15, 1954, and at that time and place will be publicly opened and read. The work to be done consists of Sand Filling, (Hydraulic Method) Revere Beach Reservation, Revere. Charge for specification is $2.00 which amount is returnable only to bidders. Proposal guarantee shall consist of a certified check for $7500.00 payable to the order of the Commonwealth of Massachusetts. Attention is called to the minimum rates of wages to be paid on the work as determined by the Commissioner of Labor and Industries under the provisions of Chapter 461 of the Acts of 1935. Complete information may be obtained from the office of the Commission. The right is reserved to reject any or all proposals.

March 22, 1954

By: Charles W. Greenough
Commissioner

OFFICIAL PROPOSALS

Bids: April 13, 1954

Route 23, Section 4-C

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Department for:

Route 23, Section 4-C, Channelization at Germantown Road and Realignment of Driveways, in the Township of West Milford, Passaic County. Length of project 0.274 miles. The principal items of work are:

Estimated:
4,873 cu. yds. Roadway Excavation—Earth
631 cu. yds. Roadway Excavation—Rock
1,019 sq. yds. Macadam Base Course, 5" thick
1,235 sq. yds. Pen. Mac. Surface, Hot Application, 3" thick
1,004 lin. ft. 9" x 20" White Conc. Vertical Curb

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Tuesday, April 13, 1954, at eleven o'clock (11:00 A.M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, New Jersey, and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.000 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: STATE HIGHWAY DEPARTMENT
A. Lee Grover, Chief Clerk

Bids: April 22, 1954

Construction of Sewer

SEALED PROPOSALS will be received at the office of the DIRECTOR OF PUBLIC SERVICE, AKRON, OHIO, until 12:00 o'clock noon (Eastern Standard Time) Thursday, April 22, 1954 for the construction of the:

MUD RUN SANITARY TRUNK SEWER
FROM
LEESER AVENUE
TO
HAWKINS AVENUE

Drawings, specifications and blank proposals can be obtained at the office of the Engineer of the Division of Sewerage, by making a deposit of Five Dollars ($5.00). This deposit will be refunded if a proposal is submitted and the drawings are returned in good condition, within five days after the date the proposals are received.

Each proposal must contain the full name of the party or parties making the same, and all persons interested therein, and must be accompanied by a certified check in the sum of Five (5) per cent of the total bid on a solvent bank, as a guarantee that if the proposal be accepted, a contract will be entered into.

Bidders must use City of Akron printed proposal form, as none other will be accepted.

The Director of Public Service reserves the right to reject any or all bids.

The City of Akron, Ohio, through its duly authorized and constituted officials, reserves the right to reject any or all proposals and to waive informality in any proposal.

THE CITY OF AKRON, OHIO
By: Leo G. Walter, Director of Public Service

OFFICIAL PROPOSALS

Bids: April 13, 1954

Demolition of Buildings

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Department for:

PALISADES INTERSTATE PARKWAY
SECS. 1P & 2M

Palisades Interstate Parkway, New Jersey Section 1-P & 2-M, Demolition of Buildings, in the Boroughs of Fort Lee and Alpine, Bergen County. The principal items of work are:

Demolition of Steel Frame Masonry Building
Demolition of Brick and Stucco Dwelling
Demolition of Stone and Frame Dwelling

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Tuesday, April 13, 1954, at eleven o'clock (11:00 A.M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, New Jersey, and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed:
STATE HIGHWAY DEPARTMENT
A. Lee Grover, Chief Clerk

Bids: April 13, 1954

New York Approach Land Borings

THE PORT OF NEW YORK AUTHORITY
LINCOLN TUNNEL
THIRD TUBE
CONTRACT LT-160.046

Sealed proposals for making land borings for the New York Approach of the Lincoln Tunnel in connection with the Third Tube will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, April 13, 1954, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Contract Engineer of the Authority, Room 1112, and copies will be furnished upon deposit of $10.00 per set. The deposit shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to the Engineer of Materials, who will furnish the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than forty days after the opening of proposals. The deposit will be forfeited if the documents are not so returned within the forty days.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
New York, April 1, 1954.

OFFICIAL PROPOSALS

Bids: May 6, 1954

Addition to Sewage Treatment Plant

ADVERTISEMENT
NOTICE TO BIDDERS
FOR THE
TOWNSHIPS OF
HAVERFORD, RADNOR, AND MARPLE
DELAWARE COUNTY, PENNSYLVANIA

Sealed bids in opaque envelopes for the construction of additions to the Sewage Treatment Plant will be received by the Boards of Commissioners of Haverford and Radnor Townships and the Board of Supervisors of Marple Township at a joint meeting in the Commissioners Meeting Room in the Haverford Administration Building, 2325 Darby Road, Haverford (Havertown P. O.), Delaware County, Pennsylvania, until eight (8) o'clock P. M., Eastern Standard Time, Thursday, May 6, 1954, and then at said place, publicly opened and read aloud.

The Information for Bidders, Form of Bid, Form of Contract, Plans, Specifications, and Form of Performance Bond may be examined at The Radnor Township Building, 212 East Lancaster Avenue, Wayne, Pennsylvania; or at the Consulting Engineer's office. Copies thereof may be obtained at either place upon payment of Twenty-five ($25.00) Dollars for each set of construction plans and specifications. The full amount of the deposit will be refunded to any bidder and one-half of the deposit to any non-bidder upon return of the set in good condition within ten (10) days after opening of bids. Checks given as deposit on plans and specifications shall be made payable to Radnor Township.

In general, the work included under the Construction Contract consists of alterations and additions to the existing Sewage Treatment Plant to increase its rated capacity from 1.2 M.G.D. to 3.6 M.G.D. The Principal items of new construction include a screen, flume meter, grit chamber, two primary settling tanks, two high-rate filters, two final settling tanks, a floating cover digestion tank, a gas holder, a glass covered sludge drying bed, two new sewage pumps, recirculation pumps and chamber, sludge pumps, and chamber, metering apparatus, piping, roadways, and miscellaneous other work, all as required to provide a complete plant ready for operation.

Each bidder must deposit with his bid, an amount of not less than Five (5%) percent of his total bid in the form of a certified check or bank check payable to Radnor Township, subject to the conditions provided in the Information for Bidders. In addition, a Consent of Surety, signed by an acceptable Corporate Surety Company, shall be executed in the form accompanying the bid.

The Townships reserve the right to reject any or all bids, waive any informalities, or to accept that bid, acceptance of which will, in the judgment of the Boards of Commissioners and Supervisors, best secure the public interest and efficient work. The Townships further reserve the right to eliminate certain items of work if they deem it to their best interest to do so.

No bidder may withdraw his bid within Forty-five (45) days after the date of opening thereof.

H. A. FRITSCHMAN
Secretary, Haverford Township
R. W. BARRINGER
Secretary, Radnor Township
R. T. NICHOL
Manager, Marple Township
WILLIAM RAISCH
Consulting Engineer
53 Park Avenue
Garden City, L. I.
New York
Dated: April 1, 1954.

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4144) will be received by Bureau of Reclamation, Denver, Colorado, until May 11, 1954, and then publicly opened for furnishing labor and materials and performing all work for furnishing and installing a 110,000-kva, 25-percent power factor, 180-rpm, 16,500-volt, 60-cycle, vertical-shaft, alternating-current generator for Hoover Powerplant near Boulder City, Nevada. Time allowed for completion will be 720 days. For particulars, address Bureau of Reclamation, Boulder City, Nevada; or Building 53, Denver Federal Center, Denver, Colorado. W. A. Dexheimer, Commissioner.

OFFICIAL PROPOSALS

Bids: May 6, 1954

Construction of Highway Bridge

INVITATION TO TENDER

The City of Clinton Bridge Commission invites the proposals of prequalified bidders on a total of seven (7) contracts for the construction complete of a two-lane highway bridge and its approaches over the Mississippi River between the City of Clinton, Iowa and East Clinton, Illinois. The contracts are listed as follows:

No. 1 Earthwork
No. 2 Bridge Substructure
No. 3 Bridge Superstructure
No. 4 Approach Roadway Paving
No. 5 Administration Buildings and Toll Houses
No. 6 Electrical Wiring and Electrical Equipment
No. 7 Illinois Approach Overpasses

Complete sets of plans, specifications and contract documents for bidding purposes may be secured from Mr. Fred G. Hansen, Secretary, City of Clinton Bridge Commission, P. O. Box 70, Clinton, Iowa at the following prices:

Contract No. 1 $20.00 Contract No. 4 $20.00
Contract No. 2 $35.00 Contract No. 5 $20.00
Contract No. 3 $35.00 Contract No. 6 $20.00
Contract No. 7 $20.00

Plans and documents for all seven contracts may be secured at a price of $100.00.

No refunds will be made upon plans and documents returned.

Proposals shall be submitted in the double pocket envelope provided and on the forms provided in the "Contractor's Proposal" which is part of a bound book containing all of the contract documents and the specifications. Two copies of this book will be furnished to each potential bidder. Each proposal shall be accompanied by a copy of this Addendum No. 1 (and any further addenda which may be issued during the advertising period) bearing signature of acknowledgement and acceptance by the bidder.

Each proposal shall be accompanied by evidence of qualification of the bidder by either the Iowa Highway Commission or the Illinois Division of Highways, and shall also be accompanied by a certified check made payable to the order of the City of Clinton Bridge Commission in the amount listed below for each Contract on which a proposal is made:

Contract No. 1 $30,000
Contract No. 2 $130,000
Contract No. 3 $150,000
Contract No. 4 $15,000
Contract No. 5 $5,000
Contract No. 6 $2,000
Contract No. 7 $15,000

Proposals will be received by the City of Clinton Bridge Commission, P. O. Box 70, Clinton, Iowa until 2:00 p. m. Central Standard Time, May 6, 1954, at which time the bids will be publicly opened and read in the municipal courtroom at the County Court House, Clinton, Iowa.

The proposal provides for the return of certified checks of all bidders within ten days, except those of the lowest satisfactory bidder on each contract.

The City of Clinton Bridge Commission reserves the right to delay final acceptance of the lowest satisfactory bids for a period of sixty days, after the receiving date, final execution being subject to the successful sale of an issue of revenue bonds required for the completion of financing the project.

The City of Clinton Bridge Commission is a quasi-public agency created by Public Law No. 526 of the 78th Congress, as re-enacted by Public Law No. 357 o fthe 79th Congress and further extended by Public Law No. 220 of the 81st Congress.

The Commission is operating with the advice and financial aid of the:

Iowa Highway Commission
Illinois Division of Highways
U. S. Bureau of Public Roads

THE CITY OF CLINTON BRIDGE COMMISSION
Mark Morris, Chairman
Fred G. Hansen, Secretary

Bids: April 15, 1954

Contract No. 38

WEST VIRGINIA TURNPIKE
COMMISSION
ADVERTISEMENT FOR PROPOSALS

Sealed proposals will be received by the West Virginia Turnpike Commission for:

The work to be done under this Contract consists in performing the required Erecting Traffic Signs including furnishing certain materials and other incidental work. This work is located between Princeton, Mile 0, and Charleston, Mile 88, Mercer, Raleigh, Fayette and Kanawha Counties, West Virginia, and is in connection with the construction of the West Virginia Turnpike in the State of West Virginia.

The Principal items of work include:

	Approximate Quantity
Type I Signs	10,500 sq. ft.
Type II Signs	300 each
Type III Signs	650 each
Illuminated Signs	32 each

Proposals will be received at the office of the West Virginia Turnpike Commission, 1340 Wilson Street, Charleston 5, West Virginia until 10:00 A.M. Eastern Standard Time, on April 15, 1954, at which time and place said proposals will be publicly opened and read.

Contract documents may be seen and may be inspected by prospective bidders during office hours, after March 25, 1954, at the office of Howard, Needles, Tammen & Bergendoff, 804 Greenbrier Street, Charleston, West Virginia, and 55 Liberty Street, New York 5, N. Y.

WEST VIRGINIA TURNPIKE
COMMISSION
D. H. Morton
Chairman

Bids: April 20, 1954

Rehabilitation of Old Rockaway Boulevard

THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
CONTRACT NYA-140.023

Sealed proposals for paving a portion of the old Rockaway Boulevard at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, April 20, 1954, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Contract Engineer of the Authority, Room 1112. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to the Contract Engineer, who will furnish the documents.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of the documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
April 1, 1954

Bids: April 15, 1954

Paving and Drainage

THE PORT OF NEW YORK AUTHORITY
PAVING AND DRAINAGE
AT BUILDING NO. 2
PORT NEWARK, N. J.
CONTRACT O & M 228

Sealed proposals for furnishing all labor, material and equipment necessary for paving and drainage at Building No. 2, Port Newark, N. J., will be received at the office of the Director of Purchase of The Port of New York Authority, Room 900, 111 8th Ave., New York 11, until 11:00 A. M. (E.S.T.) Thursday, April 15, 1954, at which time and place said proposals will be publicly opened and read.

Contract documents may be obtained upon request at the office of the Director of Purchase.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

Contractors Watch This Section —

for new projects. Publish your announcements through the proposal sections of *Engineering News-Record* and get their bids.

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POSITION WANTED undisplayed advertising rate is one-half of above rate, payable in advance.

PROPOSALS, $1.80 a line an insertion.

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DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).

EQUIPMENT WANTED or FOR SALE Advertisements acceptable only in Displayed Style.

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The advertising rate is $20.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

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Send NEW ADVERTISEMENTS: To New York Office, 330 W. 42nd St., N. Y. 36 for April 15th issue closing April 5th

HIGHWAY DESIGN ENGINEER

Degree. Minimum 5 years responsible work on overall design and planning of highways.

MUNICIPAL ENGINEER

Degree. Minimum 5 years responsible work on overall design and planning of city streets.

SPECIFICATION WRITER

Degree. Responsible experience in writing specifications for heavy civil engineering work. Must have ability to correlate specifications for incidental architectural, mechanical and electrical phases of work into completed specifications.

ARCHITECTURAL DRAFTSMAN

Minimum 5 years experience. Preferably in industrial plant design.

Submit complete resume. Salary requirements, references and date of availability with first letter.

P-2176, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

CHIEF ENGINEER

WANTED

For nationally known hydro-electric consulting engineering firm. Position offers opportunity to grow with the organization and participation in profits. Applicant must have broad experience in this specific field, and ability to organize and direct design. If you are qualified send photograph and outline of education and experience, including employers' names, your titles and duties, and references; also statement of acceptable salary range and approximate availability. Confidence will not be violated.

P-2102, Engineering News-Record
520 N. Michigan Ave., Chicago, Ill.

WANTED BY CONSULTING FIRM

Traffic Engineer
B.S. in Civil Engineering
Education in Traffic Engineering
or
B.S. in Civil Engineering
Minimum 3 years experience on Traffic Surveys and Planning.

Send complete resume—references, salary requirements, and date of availability with first letter.

P-2243 Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

CHIEF DRAFTSMAN

To assume complete responsibility of Drafting Room for Southwestern steel fabricator, supervising 20 to 30 workmen. In reply give full education, experience, background, age and salary expected.

P-2244, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

(Additional Position Vacant Advertisement on the opposite page)

GENERAL SUPERINTENDENT or Project Manager. A minimum of 15 to 20 years experience in the operation and maintenance of heavy cranes and draglines required. Knowledge of all other heavy construction equipment desirable. Experience should also include responsibility for costs and the ability to deal and associate with industrial executives. Work involves the directing of operations on the site of a steel mill located near Calcutta, India. Address all replies to Box P-2187, Engineering News-Record giving complete personal information: All details of work experience; at least 5 references as to character and ability and the terms of employment and salary arrangements required. P-2187, Engineering News-Record.

HIGH GRADE Experienced highway and/or Bridge Engineer wanted by long established prominent Eastern Firm. Include experience and Salary requirements in first letter. P-2154, Engineering News-Record.

GRAVEL PLANT Superintendent for portable and stationary plant in Michigan and Indiana. State exact experience and wages. P-1810, Engineering News-Record.

WANTED BY Central Pennsylvania's fastest growing Reinforcing Fabricator, an experienced graduate Engineer for quantity take-off and detailing. Will expand shortly into prestressed concrete work. Wonderful opportunity to advance. Salary and bonus arrangement. Brocker Mfg. & Supply Co., York, Pa.

CONSULTING ENGINEERING firm in deep south now entering industrial design and construction field requires engineer with design and organization ability. Experience required in natural gas, petroleum, petro-chemical and allied fields, or for manufacturing plants. Outline experience briefly. P-2138, Engineering News-Record.

WANTED: YOUNG Engineer capable of supervising highway construction for grading firm in Wisconsin & Illinois. State background and salary. P-2218, Engineering News-Record.

CIVIL ENGINEER, graduate preferred, for county and township road and bridge survey design and construction, position permanent, opportunity for advancement. State schooling, experience and salary expected. P. O. Box 23, Carthage, Illinois.

WANTED—GENERAL Construction Superintendent for progressive firm in Southeastern Pennsylvania, must qualify for all types of construction. Write details regarding experience, age and expectant salary to Binkele Construction Corporation, Box 268, Lancaster, Pennsylvania.

WANTED—GENERAL Superintendent on Ohio Turnpike. Must be heavy in excavation experience. P-2255, Engineering News-Record.

ENGINEER GRADUATE, 15-20 years' design and detailing experience primarily steel and concrete bridges, capable of assuming chief draftsman's duties in small established consultant's office. Location Missouri. P-2236, Engineering News-Record.

SELLING OPPORTUNITY OFFERED

SALES ENGINEER—Pittsburgh, Pennsylvania and Albany, New York territories open with established national concern selling prefabricated metal products to engineering and construction markets. Positions offered are permanent and present excellent future with aggressive, progressive and expanding organization. Engineering degree desirable. Previous sales experience unnecessary. Age 24 to 30. Car furnished. Complete training program. Salary and bonus. RW-1420, Engineering News-Record.

FIELD ENGINEER

For supervision of commercial construction in Houston, Texas area. Experience in mechanical and electrical installation desirable. Good Opportunity.

$6,000-7,000

Send complete resume to:

P-2122, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

OPPORTUNITY

For an energetic engineer with sales personality. 25 to 35 years of age, for sales work with company operating on nationwide basis furnishing Concrete Form Engineering and Rental Service. General construction experience and some Engineering college training essential. Give full details in first letter to

R. P. WILKINSON
ECONOMY FORMS CORPORATION
4301 N.E. 14th St. Des Moines 13, Iowa

SALARIED POSITIONS $5,000 — $35,000

We offer the original personal employment service (established 44 years). Procedure of highest ethical standards is individualized to your personal requirements. Identity covered; present position protected. Ask for particulars.

R. W. BIXBY, Inc.
659 Brisbane Bldg. Buffalo 3, N. Y.

EMPLOYMENT SERVICES

SALARIED PERSONNEL, $3,000-$25,000. This confidential service, established 1929, is geared to needs of high grade men who seek a change of connection under conditions assuring, if employed, full protection to present position. Send name and address only for details. Personal consultation invited. Jira Thayer Jennings, Dept. L, 241 Orange St., New Haven, Conn.

OVERSEAS PROJECTS Guide to most active constructors-engineers, oil co's., gov't. & UN groups hiring for foreign projects. Send $1. Cove-McKane Int., GPO Box 126E, NY 1, NY.

POSITIONS WANTED

PROJECT MANAGER, construction superintendent or engineer (graduate), 28 years experience heavy construction, industrial buildings, machinery. PW-1790, Engineering News-Record.

GRADUATE CIVIL Engineer — Reg. Ohio — 18 years bridge & building design, detailing & estimating experience with fabricators, consultants, contractors & government. Desire opportunity to advance with company. Prefer North Central States. PW-1964, Engineering News-Record.

DESIGN ENGINEER, age 50, experienced Plant Engineering & Layout Projects; piping, processing Equipm't., Mechanical Installations. Will relocate for responsible position. Address PW-2265, Engineering News-Record.

CIVIL ENGINEER—M.S., Reg. Calif., age 33, married, U. S. citizen. Presently employed, 6 years experience, 5 structural design. 1 administration. Desires responsible, permanent position in construction or related fields, domestic or foreign. Speaks Scandinavian languages and German. Available on 30 days notice. PW-2267, Engineering News-Record.

CIVIL ENGINEER — M.S.C.E. Age 26. County Engineer in charge of all civil works in large midwestern community last 18 mos. Desires position of responsibility and leadership with progressive organization. Will travel or relocate. PW-1966, Engineering News-Record.

(Continued on the opposite page)

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McGraw-Hill Publishing Co.

330 W. 42nd St., New York City 36, N. Y.

POSITIONS WANTED

(Continued from opposite page)

MECHANICAL INSPECTOR completed overseas U. S. Government contract of heating and ventilating plumbing and sprinkler systems. Over twenty-six years experience erection repair and maintenance of heavy industrial, power plant, pumping stations and marine equipment. Available now. PW-1988, Engineering News-Record.

JUNIOR DESIGNER BSCE. 3 yrs. experience. Desires position in Northeastern states. Present salary $5100. PW-2169, Engineering News-Record.

MANAGER—READY Mix Concrete plant conc. spec. reg. eng'r. Sales ability top Ref. & Record. Salary & Comm. PW-2134, Engineering News-Record.

CHIEF OF Party and Transitman experienced in highway construction and preliminary surveys prefer Northeastern States. PW-2186, Engineering News-Record.

ENGINEER Reg. P.E. Reports, investigations. Settlement of contractors' claims. 45 years experience; design, construction. Turnpikes, tunnels, buildings, foundations, schools, etc. PW-2073, Engineering News-Record.

CONSTRUCTION ENGINEER — C.E. Grad., Reg. Prof. Eng. 21 years construction experience, 13 of which as Supt. of Const. Know estimating, job pushing, equipment, job organizing, administration. About 70% experience in heavy construction such as pile driving, docks, bridges. 30% in industrial construction. Have a well rounded experience now wish to secure job of permanent nature. Would like big job with big company or top position with small company. Any location. PW-2261, Engineering News-Record.

CIVIL ENGINEER, Age 33, desires employment in a permanent location. 11 yrs. experience including sewer & water line construction, office engineering, highway office work, inspection work, some building construction, surveying & drafting, and cost engineering. 5 yrs. on construction of Atomic plants. Minimum salary requirements $6000. Geographic location immaterial. Available April 15. Will acknowledge all replys to this ad. PW-2246, Engineering News-Record.

PROJECT MANAGER or General Superintendent over 25 years of diversified experience on heavy Construction desires connection with construction company doing domestic or foreign work. Highest reference. PW-2247, Engineering News-Record.

CONSTRUCTION EXECUTIVE, long New York experience, qualified to handle all phases of contracting, bid to completion, buildings and heavy construction, field or office, open for new connection, preferably in New York area. C. O. Sutherland, 13 Edgemere Blvd., Shrewsbury, Mass. Tel. Worcester 7-3506.

POSITIONS WANTED

CONSTRUCTION SUPERINTENDENT and Engineer desires work in New England. Experienced industrial plants, housing, heavy construction, bridge and marine work, skilled estimator. PW-2228, Engineering News-Record.

GENERAL SUPERINTENDENT and registered engineer desires connection with Company operating in South or Central America. 20 years experience in charge large heavy construction projects South America. Can handle job from estimate to completion. PW-2224, Engineering News-Record.

CIVIL ENGINEER, Age 29, MCE (Sanitary and Structures) presently with consulting firm, some public health experience; desires responsible position with consulting firm specializing in sanitary or municipal engineering. Any location. $150 per week. PW-2204, Engineering News-Record.

GENERAL SUPERINTENDENT, 25 years diversified experience, multiple bldgs., Sewer and Water Systems, Highways and Bridges. Full responsibility, capable organizer and sober. Available immediately. PW-2222, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT. Twenty years experience, Civil Engineering background, Industrial and Commercial buildings. Prefer small Contractor. PW-2235, Engineering News-Record.

I. W. GEN. Fore. 16 yrs exp. 37 yrs. old. Steel erection, & Rein concrete & heavy rigging. Also supervision of Millwrights & Boilermakers. PW-2199, Engineering News-Record.

CONSTRUCTION FIELD office manager three years experience with prime contracting firms on federal projects. Handled field purchasing, correspondence, material receiving and storing, payrolls, union personnel matters, cost accounting against allocations. Capable of setting up field office personnel and/or supervising operations of several projects if necessary. PW-2262, Engineering News-Record.

BUSINESS OPPORTUNITIES

Well Established Southern California General Contractor interested in an associate with additional Capital to expand scope and extent of operations. BO-2082, Engineering News-Record.

Contractors Equipment Rental Business for sale going business net $20,000.00 cash needed $25,000.00. Easy terms. BO-2252, Engineering News-Record.

STRUCTURAL STEEL FABRICATOR

● Can you use representation in Metropolitan New York by a man with a thorough knowledge and experience of the business. If desired estimating, detailing and erection can be arranged for.

RA-2124, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

LEARN ESTIMATING

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Auction Advertising page 83

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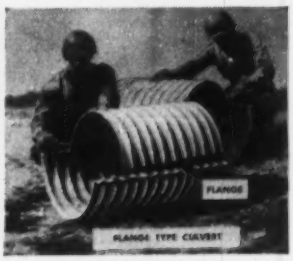

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Tractor goes over the top—of bogs and muskeg

High flotation and ruggedness are the major features of a new crawler tractor built for reconnaissance and survey over soft boggy terrain. Originally designed for use by the Gulf Oil Co. in exploring the muskeg regions of northern Canada, the new vehicle is now offered for general sale.

Although similar in purpose to the marsh buggies developed some years ago for exploration and reconnaissance in southern marshes, the crawler was built to overcome a completely different type of transport problem in the muskeg.

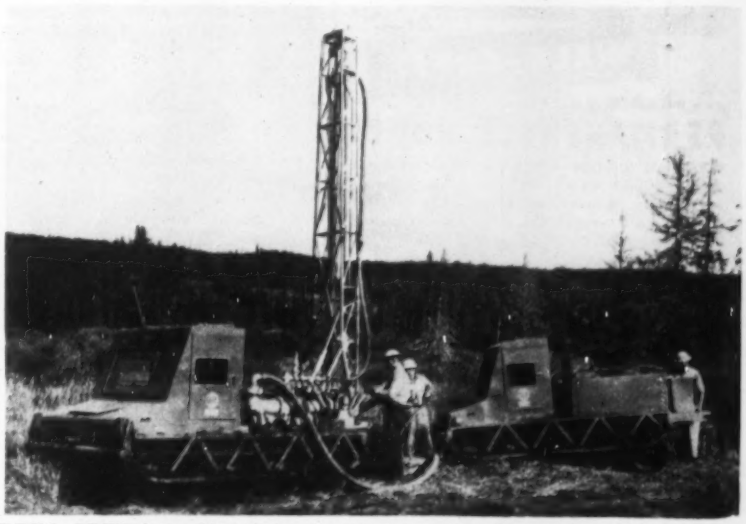
Muskeg is a moss that has overgrown the surface of glacial lakes, producing a water-soaked layer of moss and dead trees of unpredictable thickness. In winter, patches may freeze thick while others form a light frozen crust. In summer, it forms a crusty matting, often deceptively dry, which may break through under applied weight. If used as a trail, it wears through quickly.

The marsh buggy is too large for the timber trails and its balloon-like tires too vulnerable to jagged timber. For these difficult conditions, the muskeg tractor is reported to provide a satisfactory answer.

While not designed as a flotation vehicle because of the other terrain conditions it must traverse—principally hills, timberland and brush—the new tractor can venture on thinner-surfaced, more treacherous terrain than any vehicle tested by the oil company so far.

The tractor carries a 2,500-lb load on its 5,000-lb chassis, and fully loaded exerts a bearing pressure of 1½ psi over

(*Continued on page 92*)



DRILL UNIT bores blast holes for seismic exploration. Drilling equipment has been scaled down to one-quarter normal weight to increase portability.

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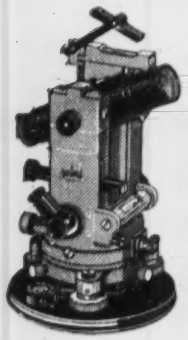

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LARSEN PRODUCTS CORP.
Dept. 9, 4934 Elm St., Bethesda, Maryland

the contact area of its 29-in. wide treads.

A midship-mounted 116-hp Chrysler engine develops the tractor's power which is transmitted to the drive sprockets through a four-speed transmission. Steering is of the usual crawler type; clutch and brakes control individual track speeds. Four bodies have been designed: a seismic instrument unit; a water unit to supply drilling and camp water, a drilling unit and a general utility and supply vehicle.

Since the units are comparatively small and the payload is not great it was necessary to scale down and lighten the equipment they carried. For instance, the drill used weighs about one quarter as much as the type ordinarily used for seismic survey. Instruments, cables and cable reels are comparatively reduced.

Preliminary design studies on bodies and equipment were made at the oil company's research laboratories and final design and field installation were completed under the direction of Field Supervisor Harry Carlyle at Edmonton, Alta. BOMBARDIER SNOWMOBILE, LTD., VALCOURT, QUEBEC.

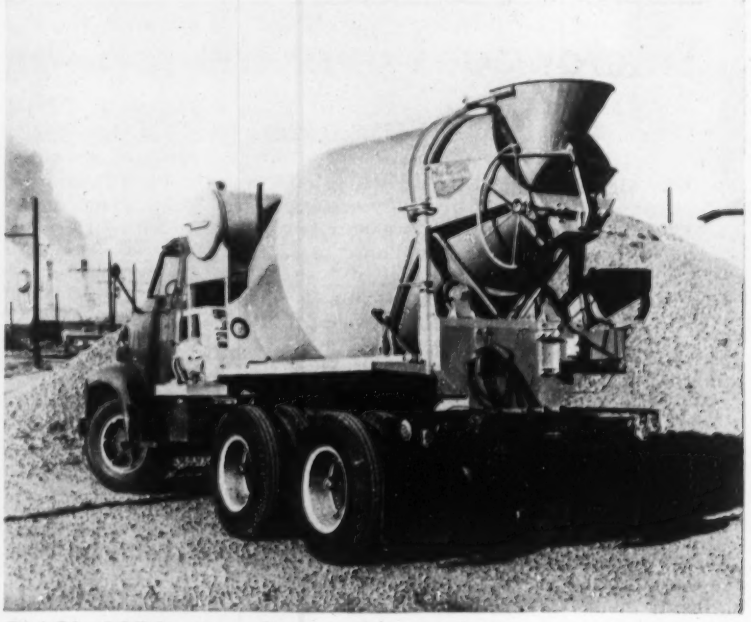
Instrument aids in setting overhead valve clearances

The P&G Valve-Gapper, a new precision instrument, utilizes a new principle in setting valve clearance or "gap" on engines with overhead valves. With it, any engine operator can make more accurate settings in less time than with "feeler" systems.

The instrument measures the travel of the valve rocker arm prior to contact with the valve stem. This measurement is transmitted to a dial indicator gage graduated in thousandths of an inch. This is said to permit setting of the desired valve clearance regardless of wear or pitting of the rocker arm.

Models are now available for most engines with overhead valves. A model that has been designed for General Motors diesel engines has a triple use. In addition to setting valve gap, this model permits visual timing of injectors and balancing of the fuel injector racks by engine operators as well as by skilled mechanics. P & G MFG. CO., 2262 N. ALBINA AVE., PORTLAND 12, ORE.

(*New Products continued on page 94*)



CMC's 1954 mixer line makes its bow

New rear end controls, redesigned drum brake, improved chain drive and an outswinging charging hopper are the added features on the new 1954 Transcrete truck mixers. The line is made up of 3½, 4½ and 5½-yd sizes. The rear end controls include clutch, direction shift and engine throttle controls conveniently grouped for operation from the ground or catwalk. The new drum brake automatically engages as the clutch is thrown out and prevents coasting. Further, the mixers employ a right angle drive—90 deg change of power direction to mixer drum—said to eliminate all strain at the universal except torque. Construction Machinery Cos., Waterloo, Iowa.

PHOTO COURTESY STEWART & STEVENSON SERVICES, INC., HOUSTON, TEXAS

quad power unit extends advantages of **CHRYSLER** *Performance and Economy to new fields*

Here's Chrysler Power at work in the South Texas oil fields. This time it is four Chrysler Model 20 Industrial V-8 Engines working together as a single unit in a Stewart & Stevenson Quad Power Unit, in turn driving a mud pump. This particular Quad has supplied mud pump power for the drilling of ten oil wells in the eight months it has been in use.

You see Stewart & Stevenson Quads in other fields, too, but nowhere do they encounter tougher jobs than pumping mud—or more important jobs either. The continued flow of mud down the hole being drilled is absolutely necessary if drilling is to continue uninterrupted. That's because mud serves several very important functions: it lubricates the drill bit, it removes bit cuttings, it seals the walls of the hole and it provides weight to prevent blowouts.

Pumping mud requires great power on a continuous basis, power that can "roll" with the heavy pulsating motion of the pump. The 331 cubic inch displacement Model 20 Engine is ideal for a multiple-engine installation. It meets the demand for high horsepower. It is a compact engine, easy to install, low in initial cost, and economical to operate and maintain. Parts are readily available, and at a fraction of the cost of competitive equipment. Each engine is supplied with a Chrysler gyrol Fluid Coupling which absorbs shock loading, thereby enabling smooth transmission of power from all four engines to the common power output shaft. One or more of the engines can be clutched out if less than maximum power is required.

Check your power needs with a Chrysler Industrial Engine Dealer. Ask him about optional equipment too. Remember, Chrysler Power is not expensive. Production-line methods adapted to specialized industrial engine building provide a custom-built engine at mass-production prices. If you prefer, write: ***Dept. 840, Industrial Engine Division, Chrysler Corporation, Trenton, Michigan.***

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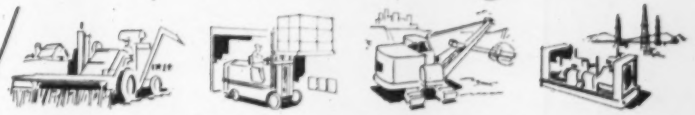

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NEW PRODUCTS

New powder-actuated tool fires through 1-in. steel

The Super-Power Jobmaster is the name given to a powder-actuated tool designed to drive heavy shank fasteners into structural steel plates up to 1-in. thick and into the hardest concrete. According to the manufacturer pins and studs so driven have a holding power approximately 25% greater than recorded for fasteners seated by any other heavy-duty tool.

The fastener weighs less than 8 lb and is 15 in. long. It is designed for either one or two-hand operation, and sets pins and studs $\frac{3}{8}$-in. in thread or head diameter.

The new tool offers a choice of four powder loads for driving any of the following: five types of utility head studs, six types of externally threaded studs, and eight types of drive pins.

A new feature, the circle-set shield, permits the setting of fasteners as close as $1\frac{1}{4}$ in. from the edge of the shield. The shield has quadrant markings for exact positioning and may be quickly converted to half-shield position when necessary.

The tool requires no breech plug and is opened for loading or inspection with a quarter-turn of the upper half of the assembly. Locked with a reverse quarter-turn, it has positive safety, making discharge impossible until the tool is pressed against the work surface in a nearly perpendicular position.

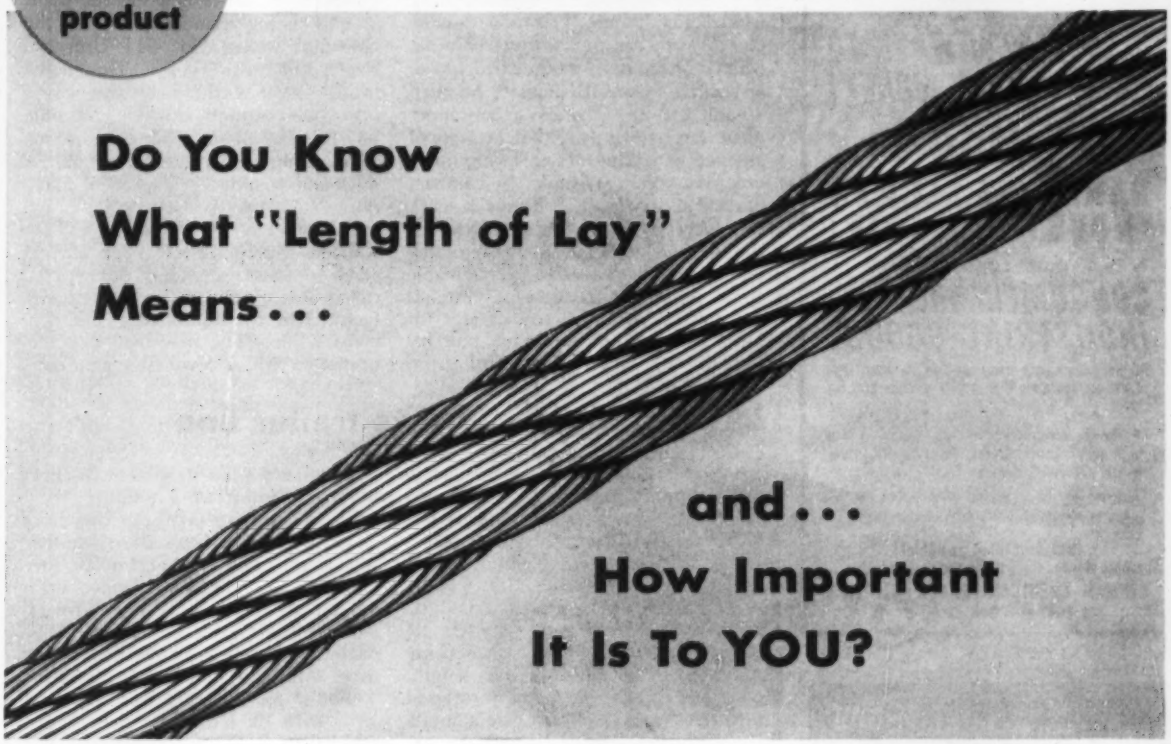
It also is reported that this is the only heavy-duty unit that can be fitted with a disc adapter for the use of $\frac{3}{8}$-in. discs. RAMSET FASTENERS, INC., 12117 BEREA RD., CLEVELAND, OHIO.

(*New Products continued on page 96*)

an ACCO product

AMERICAN CABLE

"GREEN STRAND" WIRE ROPE



Length of lay is the distance allowed for a strand to make one complete turn around the wire rope. This distance varies depending upon the construction and diameter of the rope, and upon the service requirements. The service factors which must be considered are elasticity, flexibility, stability, resistance to abrasion, and strength.

Elasticity is desired in order that a wire rope may absorb the application of loads gradually and not with sudden shock. The shorter the lay, the more elasticity in the rope. The reverse is also true.

Flexibility is that quality which a rope possesses which permits it to be flexed or bent around sheaves and drums. This property is desired from a standpoint of fatigue resistance of wires in a rope when subjected to bending stresses. An increase in length of rope lay tends to make the rope less flexible. This does not necessarily mean that a rope with a longer lay would also have less resistance to bending fatigue with which the term flexibility is often confused.

Stability of construction can be described best by observing the result of twisting the ends of a towel in opposite directions. You will find that the structure becomes harder with the increase in the amount of twisting. It will resist distortion when outside compressive force is applied. The same is true in a strand or in a finished rope. In effect, the shorter the lay the more it will resist crushing.

Abrasion resistance would seem to require more and larger crown wires per foot exposed to wear. Shortening the lay exposes more crown wires and makes the rope more flexible so larger diameter wires can be used. Then it becomes a matter for our engineers to set the length of lay to provide abrasion resistance but not at the expense of the other factors.

Strength of a wire rope is definitely influenced by the length of its rope lay. Of two ropes, identical except for their rope lay, the one with the longer lay will be stronger. Although the shortening of lays tends towards certain desirable conditions, a critical point is always reached beyond which the lay cannot be shortened without making the rope stiff.

If all this sounds mighty complicated, forget it. We don't expect you to become a wire rope engineer. That's our job—to engineer and make the best possible wire rope for you. In our "Wire Rope Recommendations for General Contractors" you will find the correct constructions of TRU-LAY Preformed "Green Strand" for your equipment. See your American Cable distributor or write us for a copy of **No. 128-B.**

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New Products briefs . . .

• **Control unit**—A new medium duty rear mounted power control unit, Model 261, is now in production by Gar Wood Industries, Inc., Wayne, Mich. The unit is designed for dozer or scraper work with tractors between 40 and 130 hp. The 261 incorporates planetary type gearing that because of absence of jerking is said to eliminate excessive strain on cable. A compact fairlead spools cable on drums in level, even layers by oscillating instead of sliding sheaves. The fairlead assembly is bearing-mounted to reduce cable strain and wear. Band-type clutches and brakes have large surface area for more effective control. Line pull for bare drum is 5,000 lb while full drum pull is 2,600 lb. Cable capacity is 268 ft of ½-in. cable.

• **Electric plant**—A new electric plant is now being manufactured by the Universal Motor Co., 511 Universal Drive, Oskosh, Wis. Designated Model 2050-M the new unit has a full 2-kw output and weighs only 165 lb. The plant is powered by one cylinder, air-cooled gasoline engine of 4 hp and operates at a speed of 2,800 rpm.

• **Blades**—Special alloy steel cutting edges for scrapers, graders, dozers, etc., called Rhino blades, are now manufactured by the Shunk Mfg. Co., Bucyrus, Ohio. The new blades are reported to reduce down time greatly.

LaCrosse improves its trailer line

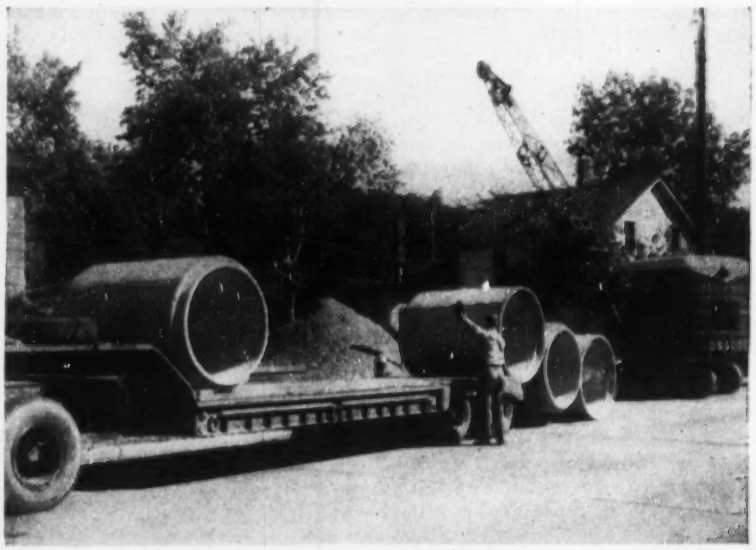
Redesigned decking, tapered automotive type spindles and improved spoke-type wheels are three new improvements that will be found on all LaCrosse Model DF-6T tandem axle trailers.

To provide extra strength and durability in end loading, the trailers are now being supplied with oak decking running parallel with the trailer length. Also, the decking is specially recessed into the trailer frame to give a much lower loading height. In fact, it is reported that the deck of the new 20-ton DF6T with drop platform is 1½ in. lower than that of the former 20-ton DF6T equipped with the more expensive low drop platform. Similarly, the new 24-ton drop is only 1 in. higher than the former 24-in. low drop. It is seen that the need for paying a premium for a low drop deck in effect has been eliminated.

The company's engineers also have developed a new tapered automotive-type spindle said to permit quick, low-cost replacement of brake spiders without having to purchase or remove expensive welded axle assemblies. Load center of wheels has also been moved in to utilize larger wheel bearings.

The improved spoke-type wheel design, with six individual rim lugs, is said to save approximately 30 lb of weight per wheel in addition to simplifying alignment of wheels and rim.

Currently these new features are available only on trailers of 20, 24, 27, 33 and 40-ton capacities but they will be incorporated later in the complete line. LaCrosse Trailer Corp., LaCrosse, Wis.



PUBLICATIONS

Insulation—A new 24-page catalog "Foamglas"—the long-life, stay dry insulation for industrial, commercial and public buildings is now available. The publication lists condensed specifications for the application of Foamglas in walls, ceilings, floors, roofs, perimeters and in low temperature space insulation. Information on all accessory materials is also listed. Physical properties, characteristics and performance data of the cellular glass insulation are covered. PITTSBURGH CORNING CORP., 1 GATEWAY CENTER, PITTSBURGH 22, PA.

Cableways—Sixteen pages of photographs, sketches and text describe types, spans, working loads and other details of tautline cableways. This new three-color catalog illustrates cableway applications that will be of interest to construction and consulting engineers, public utilities and industrial concerns. SAUERMAN BROS., INC., DEPT. E-21, 522 S. CLINTON ST., CHICAGO 7, ILL.

Storage tanks—A new 12-page booklet "Hortondome Roof, Vaporsphere, Vaportank" describes the use of these items for reducing evaporation loss from standing storage tanks handling petroleum products. They provide a variable volume vapor space which allows the air vapor mixture above the liquid in tanks to expand and contract without venting vapor to the atmosphere. The booklet contains sketches showing each structure serving as a central storage unit in a vapor saving system. A table of standard sizes is also included. CHICAGO BRIDGE & IRON CO., CHICAGO 4, ILL.

Welding school—A new pictorial booklet describes the curriculum and organization of The Hobart Trade School. Courses offered include arc welding, carbon arc welding, alloy steels and cast iron, inert-gas-shielded-arc welding, hard facing, tool welding, stud welding, submerged arc welding, oxy-acetylene welding, and cutting and pipe welding. The school is a non-profit organization and is now operating under contract to the Veterans' Administration; however, its facilities are available to all. THE REGISTRAR, HOBART TRADE SCHOOL, TROY, OHIO.

Overhead doors—Information on a full line of industrial, commercial, and residential overhead-type doors is summarized in the new 16-page Bar-

(Continued on page 98)

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FASTER...
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No jagged ends. The wire rope is cut with ends smooth and clean for perfect threading or splicing.

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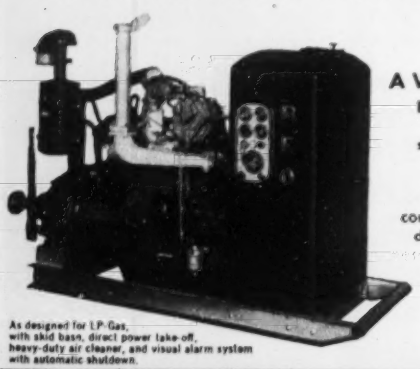

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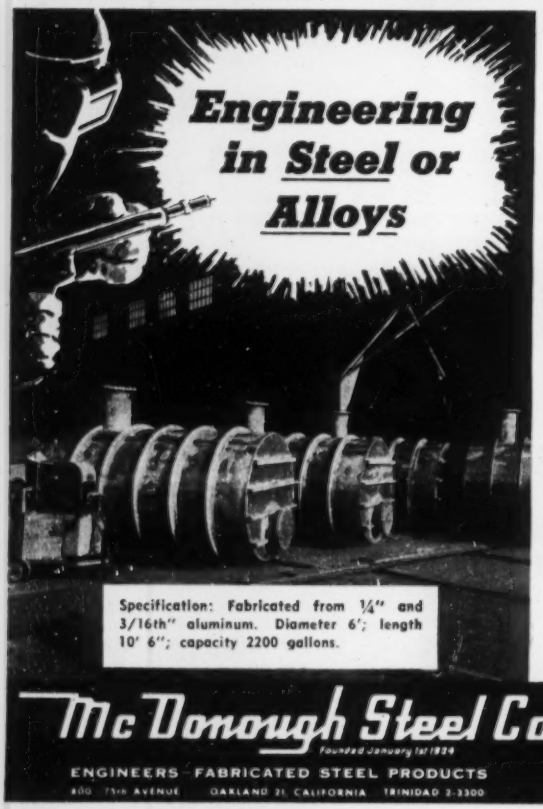
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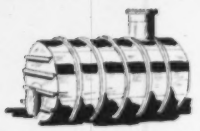

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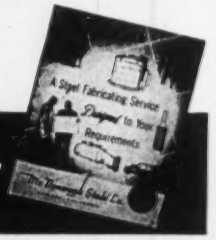

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PUBLICATIONS

col Overdoor Guide. The booklet gives complete specifications and instructions for preparation of building openings and installation of all models of the manufacturer's line. Typical examples of special installations where building conditions do not permit the use of standard equipment are also illustrated and explained. BARBER-COLMAN CO., ROCKFORD, ILL.

Hoes—All sizes of Lorain hoes are featured in a new 15-page booklet. The entire Lorain line, from the new ⅜-yd model MC-104 to the 2-yd model 820, are illustrated, using job photos to describe the "how and why" of hoe application. THE THEW SHOVEL CO., LORAIN, OHIO.

Treads and threshold—A new 12-page catalog shows the variety of treads and metals in which they are available. Full-size cross sections are illustrated. Data is included on the safe groove and abrasive cast treads, extruded cast and abrasive thresholds and miscellaneous accessories such as plates, curb bars, window and elevator sills, etc. Installation sketches are also shown. WOOSTER PRODUCTS, INC., DEPT. C 11, WOOSTER, OHIO.

Convertible excavator—The Koehring 205 excavator is featured in a new 8-page, two-color catalog. The booklet describes the operating features of the 205 when equipped as a shovel, hoe, crane, or dragline. KOEHRING CO., SALES OFFICE, 3026 W. CONCORDIA AVE., MILWAUKEE 16, WIS.

Elevator buckets—Catalog No. 100 is a 12-pager illustrating the Standard line of steel elevator buckets. Pertinent data and prices are also given. THE STANDARD METAL MFG. CO., MALINTA, OHIO.

Fluorescent fixtures—This 8-page booklet is designed for lighting specialists and gives complete engineering data and dimensions. Entitled "Modern Air Cooled Fluorescent Fixtures" the booklet is concerned primarily with fixtures of the louver type. EDWIN F. GUTH CO., 2615 WASHINGTON BLVD., ST. LOUIS 3, MO.

Conveyor loader—A new catalog, available to equipment users, describes the Athey force-feed HiLoader. The well-illustrated 8-page booklet shows the HiLoader on a variety of applications, and details that many features of the machine. Actual job data are presented to prove performance. ATHEY PRODUCTS CORP., 5631 W. 65TH ST., CHICAGO 38, ILL.

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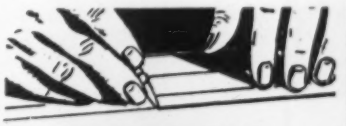

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EDITORIALS

Bold city planning

THE CHICAGO PLAN to replace 151 acres of slums bordering the commercial center of the city with $400-million worth of new buildings and utilities, as announced last week, represents the kind of bold planning that many more cities need. Piecemeal rebuilding of the rundown areas that infest every major city—and even many smaller ones—has long since been discredited as inadequate, yet the alternative, as now exemplified in Chicago, has been slow of adoption. Pittsburgh is a notable exception, and if the Chicago plan can be carried out, these two examples may be enough to encourage more such bold planning elsewhere. If they do, much credit must go to those who have promoted the passage of redevelopment laws, which permit public condemnation and resale of city slum areas. It is to be hoped that the Supreme Court can uphold the constitutionality of such laws, in a case now pending, so that bold city planning may have the green light that it needs.

Shock waves from airplanes

WHEN THE EXPERIMENTAL AIRPLANE XF-100 buzzed the U. S. Air Force administration building at Palmdale, Calif., at supersonic speed last October, the shock wave shattered most of the ¼-in. plate glass at the entrance, a number of office windows and cracked the beams over the entrance door. Since then rumors have been spreading about the potential of this type of shock wave as an offensive military weapon. As a result concern has developed among engineers as to what provisions should be made to protect structures against plane-induced shock waves.

As to the facts in the situation, North American Aviation Co. engineers, who have studied shock waves, report that light structures could be endangered by supersonic shock waves, and that pressures of the order of 50 psf, corresponding to a wind of 140-mph velocity, may be expected in the not-too-distant future. The Air Force, on the other hand, says that there is no tactical value to the shock wave from supersonic aircraft, which have more important missions to carry out than flying low near inhabited areas.

The conclusion might, therefore, be that damage is possible, but not very probable. Moreover, since the greatest menace will be from flying window glass, whatever efforts are made to minimize this danger in bombing raids will be equally effective against shock waves.

Actually, the possibility of damage by tornadoes should give building designers much more cause for concern than shock waves since tornado wind velocities may reach 300 mph. Even under those conditions, however, much can be done at reasonable cost to improve the resistance of structures to tornadoes (ENR June 25, 1953, p.108). And if the maximum is done in good design practice to resist tornado forces the problem of shock waves from aircraft will be taken care of automatically.

It is worth re-emphasizing that the very minimum that architects and engineers can do is to ascertain that the building-code requirements of their communities are based on the latest information, and that, at least, the more modern structural and fire-protection requirements are made retroactive. Furthermore, building inspectors and the courts should be impressed with the importance of enforcing these requirements. If this is done, supersonic shock waves, even if used as a military weapon, should be no cause for special alarm.

State credit for toll road bonds

WARNINGS against placing state credit back of bonds issued to finance toll highways were sounded recently by three men whose opinions should carry weight with state officials. Two were partners in bond houses—C. C. Hardwick of Smith, Barney & Co., New York, and C. S. Garland of Alexander Brown & Sons, Baltimore—and the third was Charles L. Dearing, Deputy Under-Secretary of Commerce, formerly an economist for the Brookings Institution in Washington, who was co-author of a study of toll roads for that research agency. Dearing and Hardwick spoke at the U. S. Chamber of Commerce conference on highways (ENR Dec. 17, p. 27) and Garland spoke at the ARBA meeting in Atlantic City (ENR Jan. 14, p. 25).

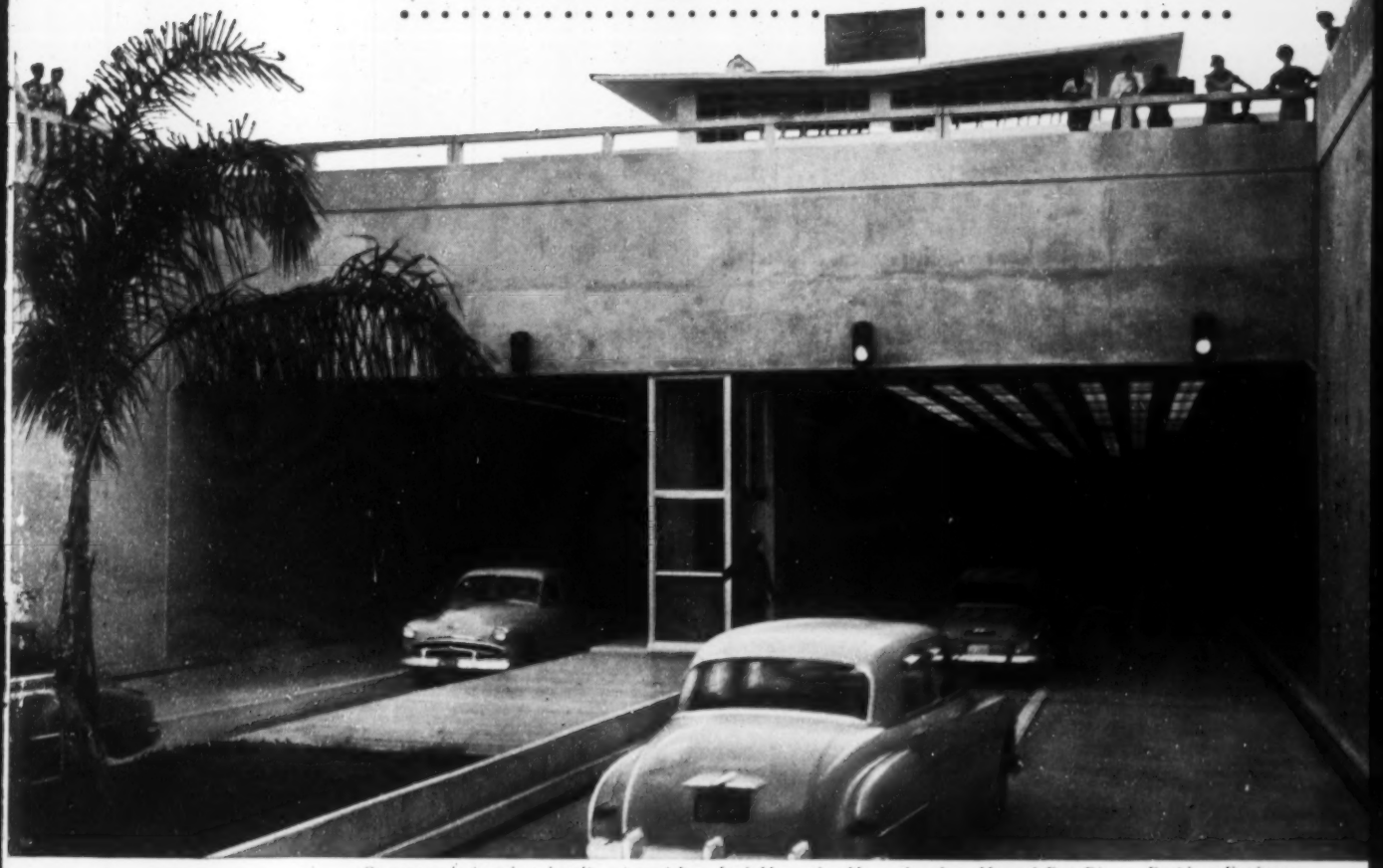
Conspicuous examples of placing state credit back of toll highway bonds are seen in the case of the New York State Thruway and the New Jersey Garden State Parkway. In both instances the proposal was put to popular vote and received widespread approval on the ground that large sums would be saved through the lower interest rates for which the state supported bonds could be sold as compared with bonds backed solely by toll income.

But students of public finance see that saving as a sort of will-o-the-wisp. They fear that the trend can get out of hand and affect adversely the interest rates that a state may have to pay in the future for other bonds it must issue for schools, state institutions, etc. Mr. Dearing went further. He is concerned lest the placing of state credit back of bonds issued to build toll highways may "invite the substitution of political criteria for sound engineering" in determining where and when a toll facility is built.

These warnings come at a time when most of the toll road projects with ample potential income have been built or have passed the financing stage, and when more attention is being paid to less attractive undertakings. That fact gives special significance to the advice of these three men who doubtless can view current developments more objectively than can many who are much closer to the planning for specific toll highway projects.

Raymond CONSTRUCTS HAVANA'S

ALMENDARES RIVER TUNNEL



Structure designed under direction of Ing. José Menendez Menendez. Ing. Manuel Ray Rivero, Resident Engineer.

With the completion of this new tunnel beneath Havana's Almendares River, a quick and efficient link between the suburbs of Vendado and Miramar was opened to thousands of motorists. The complete construction of this 1,725 foot tunnel was accomplished by Raymond . . . another example of the types of diversified projects handled by Raymond around the world.

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THIS International Harvester TD-14A tractor was built to handle hundreds of tough, dirty jobs with minimum time-out for maintenance and repair. One example of its rugged construction: the front track idlers are mounted on Timken® tapered roller bearings.

The track idler bearings have to take heavy radial shock loads when the track hits boulders, trees and other obstacles. And they must also be able to withstand heavy thrust loads, especially when the TD-14A bounces or slips off boulders and large clumps of dirt as well as in turn skids.

The tapered design of Timken bearings lets them handle both radial and thrust loads with ease. And line contact between rollers and races gives them load-carrying capacity to spare. On top of that, Timken bearings are case-hardened to give them hard, wear-resistant surfaces over tough, shock-resistant cores.

Timken tapered roller bearings help solve the problem of deep muck, mud and water by holding housings and shafts concentric. This makes closures more effective. Mud and water stay out, lubricant stays in.

Make sure you specify Timken bearings in all the equipment you build or buy. Look for the trademark "Timken" on every bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

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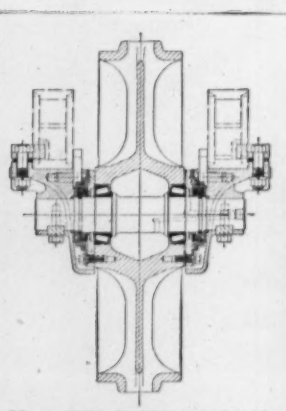
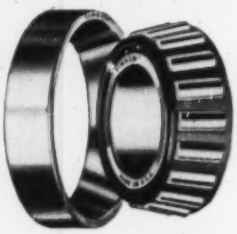


How **THE INTERNATIONAL HARVESTER COMPANY** mounts the front track idlers of its TD-14A on Timken tapered roller bearings to insure less friction, longer life, minimum maintenance.



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